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Original Contributions.

PREPARATION OF COMPOUND CAVITIES IN MOLARS AND BICUSPIDS.

By O. L. Kerr, D.D.S., Independence, Mo. Read before the Missouri State Dental Association, at St. Louis, Mo., July 5–8, 1898.

I have chosen this subject for a paper because I believe it to be the groundwork of operative dentistry, and at the two Missouri Association meetings I have attended nothing has been written on the preparation of cavities. It is a subject about which too much cannot be learned. Not that I intend to teach the members of this association anything, but hope to arouse some discussion and induce others to give their methods. I do not claim any originality, for I am indebted to Dr. C. N. Johnson for the most of my knowledge of operative dentistry, though I ought perhaps to first make an apology to Dr. Johnson, for fear I may have strayed so far from his teaching as to disgrace him in an effort to recapitulate.

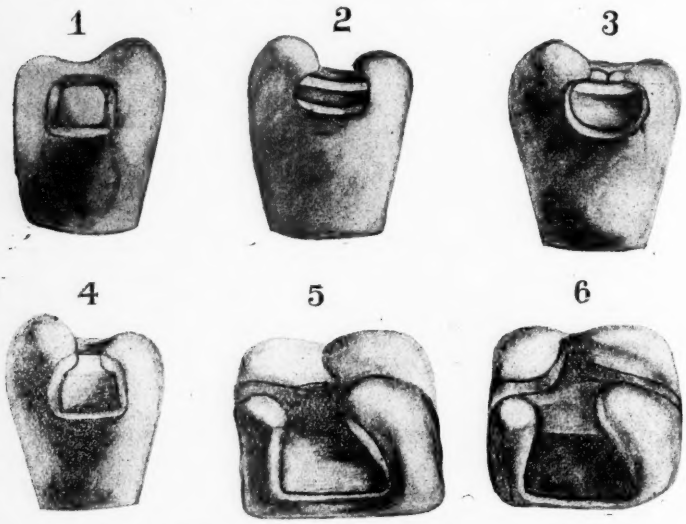
The first thing necessary is space. We cannot expect a perfect operation in a normal denture without separation. The old law holds good here, if anywhere in dental science: "No two things can occupy the same space at the same time," and no operator can make a perfect operation without room for his instruments; however delicate they may be, they must occupy some space.

The first diagram I shall show, No. 1, is a simple cavity on the mesial approximal surface of a bicuspid, extending near the occlusal surface. If this be prepared, leaving it a simple cavity, you will have unsupported dentin and enamel at the occlusal surface, which will soon break down, because the dentinal canaliculi run longitudinally, and when destroyed the tooth substance loses its tenacity and will not stand the force of mastication.

No. 2 shows a compound cavity extended approximately so its margin is against the contact point of the opposing tooth. Here it is necessary to refer to the law "Extension for Prevention." If the

margin of the cavity is against the other tooth, food will naturally lodge between the teeth, and as the margin is the weakest point in a filling, however perfect the operation may be, thus caries is invited where the tooth substance has the least power of resistance.

No. 3 shows a compound cavity with round base, which would allow a filling to rock from side to side under the force of mastication. Also, as you see, the cavity has weak overhanging enamel edges at the occlusal surface, which having lost their nourishment, will become brittle and soon break down even though they appear strong at the time of operation; the dark line in the center also



shows the fissure has not been cut out to the end. The cusps on bicuspid teeth are often poorly united, and in most cases where fissures are involved they should be excavated to the very end, or if not the saliva and food will be admitted, caries set up and in a short time the beautiful filling which you admired so much at time of completion will be found leaking. You are almost compelled to tell a lie to your patient to clear yourself, by saying: "Madam, I am sorry, but your teeth are too soft to hold a filling and must be crowned."

No. 4 is a picture of a compound cavity when completed. Sup-

pose first a simple cavity, as shown by No. 1. Take an inverted cone or fissure bur, extend the cavity over the occlusal surface to the very end of fissure. In a case as illustrated by No. 2 extend the cavity below the cervical contact point; and in No. 3 make square base with inverted cone bur; break down the overhanging tooth substance with a chisel, the margins of cavity being extended cervically below contact point, also lingually and buccally, which gives a square base, with fissures cut to the end; overhanging tooth substance cut away, using the step form in order to excavate fissures without endangering the life of the pulp. We now have a perfect picture, No. 4.

Manner of Retention: Square base; slight grooves at lingual and buccal expansion in distal end of fissure. I do not mean to have the enamel at base square-cornered, but slightly rounded, at either lingual or buccal cervical margin, with the groove in the dentin square and deepened slightly toward lingual and buccal surface. Cut the groove horizontally at the cervix in the dentin and not under the enamel; up the lingual or buccal wall excavate slightly under the enamel—as the dental fibres run perpendicularly you will not endanger the life of the enamel at this point. At the step, which must also have a square base, if you wish to use a groove at all, make it vertically with the enamel, as at this point the groove must not be made under the enamel. Continue this groove in like manner across the distal end of fissure; make the fissure wider at the distal end, thus forming a strong anchorage, and the filling can not be moved forward. Be sure the fissure is cut through the enamel to the dentin so that there may be body enough to the filling material to withstand the masticating pressure of *soft bread*, as you know that is the only thing which ever breaks an artificial denture or dislodges a filling. Bevel the enamel for three reasons: First, that there may be no sharp overhanging enamel edges; second, to avoid checking while inserting filling; and third, so that the filling material may slightly overlap the tooth substance. Use sharp chisels, sandpaper strips and disks in smoothing the edges, and if skillfully handled, disks in many cases are good to use in beveling.

I shall show but two cavities in molars. No. 5 is a cavity with mesial and buccal fissures involved, which must be excavated and extended over buccal surface; and the laws governing the preparation of these cavities being much the same as in No. 4.

No. 6 shows the buccal, distal-lingual, and distal-occlusal fissure involved. Extend lingual fissure over lingual-occlusal edge and down lingual side; extend the cavity to the end of distal-occlusal fissure; in these fissures no grooves are needed, as they are usually so narrow that a square base will furnish all the retention necessary.

General laws: Square bases; excavate wide of diseased tooth substance; smooth edges, slightly beveled; all fissures excavated to end; use step over pulp, and always "Extension for Prevention."

Discussion. Dr. F. F. Fletcher: There can be no set rule for the preparation of cavities, but Dr. Johnson's method is one of the best that has been given us. It is, however, most applicable to patients 18 to 20 years of age, and I think we would greatly err if we took a patient 8 to 14 years of age and attempted to cut out the cavities in this manner and fill with gold. In such cases it is much better to partially prepare the cavity, cut away only so much as would break down under ordinary wear, and then fill with some temporary material. A point to be noted in all cases is the general condition of the mouth. Where little or no care is taken there will be much soft tartar, even in the interstices, and here it is necessary to cut more vigorously.

PRELIMINARY AND GRADUATION REQUIREMENTS—THE LOGICAL STANDARD.

By M. F. Ault, D.D.S., Indianapolis, Ind.

Attention is first called to the principle, that in this country each one is entitled to the pursuit of happiness, and the rules of an organization are not in harmony with the principles of life in the United States if they defeat the laudable aspirations of a young man or render void the law of natural selection.

There seems considerable tendency on the part of those whose duty it is to prescribe the terms of good repute among dental colleges to move along the line of honest endeavor, but when the plan proposed is compared with our principles of life and common educational advancement in the different states it is certainly found to be excessive and arbitrary. It is proposed by the National Examiners to increase the preliminary requirements until they shall be equivalent to high school graduation. I am sure that while this is honestly entertained as a necessary step, it is beyond the advantages offered by the people in their means of public education, and this is

true not only in those states without high schools, but in most sections of the north this privilege is a luxury.

A high school diploma will not make a better student or more efficient dentist than an honest rank won in the common English branches, which so far as I know every township in the country offers its children free. Suppose a young man from a township has passed with credit the requirements of a good common school and should decide to study dentistry. Is there a just reason for excluding him? To me there is as good reason for exacting a university degree as a high school diploma.

The plan of high school requirements will not only debar many desirable students, but if honestly enforced will prove disastrous not alone to new schools, but even those with age and large attendance will be ruined. Why does this seem so? Because the requirement is beyond the public means of general education and no school can select a sufficient number of students from high school graduates to enable it to survive. Of course dental departments of state universities can do that which private institutions would not, with the present competition and hazard in business, attempt.

Ignorant students are not desired and we can depend upon the natural instincts of an organization to protect itself by casting off ignorance which is so dense as to prove an obstruction to the work of the school. But this is not a plea to admit any who might apply, but to place the standard of admission where it will be equal to the means offered by our common school system, and to place the standard of graduation where it will be equal to the demands of a highly skilled and intelligent profession.

Any person who can pass a good examination in the eight common English branches can secure a license to teach, and it seems to me that a test in those branches which are required of persons engaged in the public service ought to be sufficient intellectual equipment to study those branches which belong to the dental course.

This becomes more apparent in view of the small number of males that graduate from high school. A class of fifty will remain intact until it finishes the common course or the A grammar grade, and during the four years of high school the number and the ratio between male and female is so reduced that the graduating class will probably have four boys and sixteen girls. The unusually large class graduated from the Indianapolis high school in 1898

numbered 112, and of these there were only twenty-two young men. So I believe that the *logical maximum requirements* for admission to dental colleges is to be found in compliance with the general school law.

I wish to suggest a plan for admission and graduation which will if adopted not only possess the merit of being simple and inexpensive, but will give great impetus to uniform and substantial progress. (a) Make no excessive entrance requirements, but decide upon a standard which will be so satisfactory to all recognized schools that none will resort to slippery tactics as a means of self-defense, and that will give all worthy persons a chance to prepare themselves for examination before the National Examiners. (I mean that a dental college should be a place of preparation only and that in no sense should a school be the agent to determine fitness for practice.) (b) Let the National Examiners prepare the graduation questions, such questions to be the same for all colleges and sent sealed to the dean of each school. (Schools of the Association are apt to have the same length of term, and final examination could be set for the same date, except universities, and they can be provided with an extra set of questions). (c) Let the National Examiners appoint some disinterested person to be known as examination inspector, and on morning of examination the national seal is to be broken and examination conducted in the presence of the inspector. (d) Let the graduation fee, which is so often foolishly expended for worthless display, be used to pay the examining committee and inspectors for their services. (e) After the examination the inspector is to take charge of the papers and forward them to the National Examiners' headquarters, where they will be examined and graded and diploma issued in accordance with the supreme decision. (f) Let each school be assessed in proportion to its number of candidates for the degree.

This plan is designed to give all an opportunity to study dentistry without unjust restriction, and to place students and teachers under the necessity of submitting to a disinterested and unsympathetic body. It will secure better work by students and enforce closer attention by the faculty to know that the work of teacher and pupil is to be judged by men whose relation is so remote as to make all feel that merit is the only winning element.

It is evident that we have two plans before us, one local and the

other national. The first allows each college to determine its own standard, while the other is a single national standard for all. The first guarantees the irregularity and confusion that may be expected from as many standards as there are colleges, and the other will guarantee uniformity in work and equality in recognition and respect, since the diplomas of the associated colleges will possess the value of national endorsement.

THE YOUNG MAN IN DENTISTRY.

By O. W. Bedell, D.D.S., St. Louis. Read before the Missouri State Dental Association, at St. Louis, July 5–8, 1898.

The mechanical ability of most young dentists is equal to and considered as all-round men they are far in advance of what older men were when the latter entered dentistry. This is necessarily so, as they have all the advantages of the experience, training and instruction that have cost the older practitioners years of practice and study to acquire, presented to them in a short time and in a systematic and logical manner by men trained in the art of teaching. So they do not really begin where the older men did, but rather where they left off. For the same reason, each year should see better men turned out from our colleges, for the instructors have had one more year's experience in teaching and the students should get the benefit of it.

Not so very long ago, when a young man decided to begin this study he was expected to serve an apprenticeship from one to three years under an established dentist, keeping the office and instruments clean, and polishing rubber plates. At the present time, however, he would probably enter some college at once, and passing through the interval of college attendance, arrive at his most trying examination—that of public opinion.

Should he succeed with the public his relations with the other members of the profession will be changed. While attending school he was "a good fellow, a fine student, and had the making of a skillful dentist," but he now becomes the competitor across the street, and as such must enter his youth and lack of reputation against the experience and standing of the older man. Furthermore, he must not strive to remove this handicap by reducing prices or advertising, unless he wishes to be considered a quack and an outcast from the society of professional men.

Competition in dentistry is sharper than ever before in the history of the profession, and will become even sharper in the future. Men who have achieved great success and reputation during the past few years, if compelled to begin over again might find it hard to make both ends meet. Each year sees a large number of young men graduated from our dental institutions of learning, many more than those going out of dentistry, either by retirement or death, and the question arises, what can be done to enable these graduates to become reputable and prosperous dentists?

To furnish enough practice for the men who are beginning each year, either the older practitioners must divide their patients with them, or the general volume of dentistry done must be greatly increased. To accomplish the latter, I would suggest that the profession make greater use of the most important factor in the education of the public—the newspapers. At present they are filled up with the advertisements of unscrupulous men, who with high-sounding titles, deceptive promises and inducements prey upon the masses, and it is not only the ignorant who are impressed and taken in. To counteract this evil I am in favor of the extensive use of the press to describe new methods, appliances and inventions, which will show the masses at large that there are no secrets in our profession, and will disabuse their minds of the idea that some advertiser is the only expert crown and bridge worker in the western hemisphere.

The code of ethics in the medical profession is even more strict than our own, yet articles are written on medical subjects, not necessarily signed by any one individual, which instruct the public in many things pertaining to their health and happiness. Most people have a much better understanding of such terms as appendicitis, pneumonia, meningitis, as well as the technical operations in laparotomy, tracheotomy, and even removal of the stomach, than they have of pulpitis, and abscessed tooth, porcelain crowns, and last but not least—the making of a bridge—which they know as teeth without plates. That this is true is mostly our own fault, for we have simply stood aside and given over this excellent medium for instruction to the very men who do the profession the most harm.

I would recommend that articles be prepared by men appointed by the various societies, and after approval as a body of said articles they be given broadcast to the newspapers over the land without

signature of any kind, unless merely, "Published under the auspices of so-and-so society." For instance, some well written, concise article on cataphoresis might instruct many as to its use and mission, and dentists would then have to supply themselves with modern appliances to keep up with their patients rather than advertise their outfits to secure patients. This would not be advertising but merely instructing the public.

Discussion. Dr. F. M. Fulkerson: I question the statement that the young men in dentistry begin where the old ones leave off, for nine-tenths of those with whom the young men come in competition probably know more than he will in ten years, and in the practical sense there is but one place to begin. Not long ago a dentist left college with the absolute assurance that he could make a living the first month and perhaps make money the first year he practiced; but that day is past, and I believe it is a good thing. Young men are not able to handle all kinds of patients when they leave college, and if they could step at once into a lucrative practice most of them would never become dentists.

Dr. B. L. Thorpe: The majority of young men make a mistake in attempting to establish a practice in large cities, since for various reasons the field is much overcrowded in those places.

ANTISEPTICS IN DENTISTRY.

By A. H. Thompson, D.D.S., Topeka, Kan. Read before the Missouri State Dental Association, at St. Louis, July 5-8, 1898.

The earliest stage of the civilization of mankind is known to archaeologists as the Stone Age; this was succeeded by the Age of Bronze; then came the Iron Age, then the Age of Steel, but this day of marvels can best be named the Age of Antiseptics. Antisepsis can well lay claim to being the worthy rival of electricity, as the great distinctive feature which most marks the advance of civilization in the last few decades. Its principles and methods are so thoroughly scientific, its applications so exact and its benefits to humanity so marvelous, that it may well be christened the greatest discovery that has ever crowned the genius or blessed the hands that strive to minister to the sufferings of mankind. Fame can never honor too much the grand intellects who first discovered the principles of antisepsis, nor sufficiently reward the tireless self-sacrificing

workers and investigators who have developed and applied these principles in the treatment and prevention of disease.

The growth and development of the principle of antisepsis and its extension in every direction, so that it includes numbers of diseases which were not thought to be of zymotic origin, has led to the evolution of a distinct science of bacteriology. The greatest positive advance in the fields of etiology and therapeutics has been under the guidance of this science. Its theories are so high and intellectual, its principles so simple and comprehensive, its methods so exact and the results so positive that its accomplishments and triumphs are nothing short of marvelous. Antiseptic therapeusis applied in medicine and surgery has saved thousands of lives during the last few years which would have been lost under the old methods of treatment, and the enlarged usefulness of the medical profession through this means alone cannot be overestimated. Think of the lives lost through the horrors of gangrene and septic diseases during the late civil war just before the announcement of the principles and treatment of Lister, and then think of the results of the antiseptic treatment of wounds at the present time, when the occurrence of gangrene can be due only to criminal neglect on the part of the attending surgeon.

As a branch of medicine, dentistry has shared in the benefits of the new therapeusis to a wonderful degree, and has been peculiarly blessed by the discovery and application in practice of the principles of antisepsis. It has been of particular value for the reason that most if not all of the lesions which afflict the teeth belong to the category of zymotic diseases, the treatment of which was purely empirical, unscientific and uncertain until the promulgation of the discoveries of our great investigators in relation to the true germ origin of dental disorders.

The conclusive experiments which demonstrated the bacterial origin of dental caries, for instance, marked the greatest advance of the last half century in our knowledge of the etiology of this puzzling and destructive lesion. It had been treated empirically by mechanical means for many years, with more or less success, but no one could explain why the removal of the carious matter from a cavity in a tooth, and the exclusion of moisture and air from that cavity by a mechanical stopping, should cure the disease and stop its ravages at that place. From the time of Hunter downward many

theories were propounded to account for the action and phenomena of dental caries, but it remained for Miller with his wonderful experiments to prove by exact demonstration the true nature of the disease and the scientific accuracy of the operation of filling which had been practiced empirically. Miller's experiments settled forever the much discussed question of the etiology of dental caries, and the splendor of his achievement brought undying honor to his name, and the indebtedness of the dental profession to him can never be repaid.

Miller's brilliant discovery was only the beginning, however, but it was a beginning, for scientific precision had not yet been attained regarding any diseases of the teeth and mouth, and by means of the methods then introduced we have ascertained that there are few diseases of the mouth and teeth which are not due to or modified by the presence of organisms. In germ diseases we know that the incubation, growth, death and elimination of the organisms and their products occasion most of the phenomena which accompany the progress of the disease from inception to termination. The symptoms succeed each other with persistent regularity, each stage in the march of the disease being indicative of a corresponding stage in the life history of the microorganisms whose presence is the cause of the pathological disturbance. These organisms operate by processes more or less allied to chemical reactions, as their principal office is the development of ferments which have a toxic effect upon the tissues in many ways similar to organic poisons. It is these ferments which produce the pathological conditions, not the organisms themselves, and if the work of elimination is successful the system recovers. It is to aid nature by destroying the germs at their inception that antiseptics are employed, by which their work of secreting toxic elements is defeated and the tissues saved the risk of being overcome by poisonous secretions.

By the application of these principles to the study of dental caries Miller achieved a great victory. He found that this destructive lesion was merely a germ disease and was amenable to antiseptic treatment. This principle is now applied to almost all other dental diseases, and the failure to cure them in practice is due only to the limitations of human knowledge and skill.

For instance, septic root-canals and alveolar abscesses had been treated empirically with antiseptics for years, but the exact relation

between cause and effect had not been demonstrated by investigation and experiment. Some abscessed teeth were saved accidentally, but they were not treated scientifically because the science of the condition was not known. With the discovery of the bacterial origin of pus-formation and suppuration, a flood of light was let in upon this as upon many another obscure lesion. Then it was that exact treatment began to be followed on the scientific basis of antisepsis, and thousands of teeth that were formerly extracted when dead and abscessed are now preserved in usefulness. Every practitioner now saves teeth that but a few years ago would have been condemned to the forceps. This is a wonderful advance. The many remedies, all of an antiseptic nature, which are now used in the treatment of putrid canals and alveolar abscess attest the universal recognition of the septic nature of the disease, and all the phenomena attending its manifestation are now well understood as being indications of its bacterial nature.

In the investigation of that *bete noir* of modern dental practice, pyorrhea alveolaris, great advancement has been made along the line of antiseptic therapeutics. While constitutional in its origin, the local manifestations of this affection are of a septic nature, and these must be treated locally from an antiseptic standpoint. This is a fact that the profession has been slow to comprehend, but until they do acknowledge the presence of this great principle, little progress will be made in its therapeusis. The most used remedies are mainly antiseptic—often containing, it is true, properties of benefit in other ways to the tissues. The pyogenic membrane is the great enemy to be fought in this disease, and so caustic germicides are of immediate value. But they must be used intelligently and scientifically, with a knowledge of the disease and of the ends to be attained by scientific treatment. These are now but too imperfectly understood, although there can be but little doubt that by proceeding upon antiseptic lines we shall the sooner reach a successful method of combating this terror of daily practice, so far as local treatment is concerned. Constitutional medication is also important, of course, but the local treatment must be antiseptic.

A general danger to the oral cavity as a whole is the development of catarrhal conditions. These may arise from infection from the nasal cavity or pharynx and the mucous membrane of this area be affected in the same way. Hence cleansing and antiseptic

washes are indicated for constant use in all mouths as a preventive of this dreadful malady. Numerous diseases of the mucous membrane arise from various causes and these are always germ diseases. Antiseptic washes will also prevent these by the timely destruction of the germs and, in the case of children especially, will conduce to health and perhaps even save life by prompt action.

Discussion. Dr. C. L. Hungerford: Contagion and contamination are two points very little understood by the laity and often, unfortunately, by professional men. I have seen able surgeons clean their finger-nails with a common pocket-knife just before an operation where every preparation had been made for disinfection.

Dr. C. H. Darby: There is a tendency nowadays to rely too much upon antiseptic medicines and to neglect all mechanical means, and young practitioners especially err on this point. They know that a certain antiseptic will do a certain thing under certain poisonous conditions, so they proceed to pack the root-canals with this antiseptic, without employing any of the possible mechanical means for obviating the difficulty. When the mechanical means, which are the very foundation of all antisepsis, are exhausted, then is the time to intelligently use antiseptic medicines.

ANTIDOTES.

By DeCourcey Lindsley, D.D.S., St. Louis. Read before the Missouri State Dental Association, at St. Louis, July 5-8, 1898.

In order to make the subject of my paper a little more clear, I will preface my remarks by citing a very sad accident which occurred in St. Louis recently, adding one more victim to the list of deaths caused by that *absolutely harmless* anesthetic, nitrous oxid gas.

"Miss G., 26 years old, died yesterday afternoon in a dentist's chair, in the Holland Building. Death resulted shortly after the patient had inhaled gas to alleviate the pain of having a tooth extracted. Miss G. complained of a severe toothache and, in compliance with her own suggestion, Dr. S. administered nitrous oxid, commonly known as laughing gas. Scarcely half a minute intervened before the young woman's face began twitching violently as she convulsively clutched the chair with her outstretched hands. In another instant the aching tooth was in the doctor's nippers. The pain that accompanied such an operation is usually sufficient to revive the patient, but Miss G. showed no signs of coming to, and

Dr. S. immediately resorted to artificial respiration to resuscitate her. Her continued coma alarmed Dr. S. and he called Dr. B., another dentist associated with the company, and his young lady helper, to his assistance, but despite their efforts the patient showed no signs of returning life. Dr. E., a regular physician, was summoned, but after working with the young woman a few moments he pronounced her dead. Deputy Coroner Lloyd was notified and an inquest was held. Dr. Lloyd did not hold Dr. S. responsible. The verdict was accident."—*Daily Paper.*

This, gentlemen, has brought most vividly to my mind the question, had the proper antidote been at hand, and the knowledge of how to use it immediately without wasting precious moments in sending for a physician, need this sad calamity have occurred? We all know how careless operators who are in the habit of administering gas will become, just because it has been their good fortune never to have had an accident, but you never know when the lightning is going to strike, therefore "Remember the antidote." There is a class of persons who have what is called an idiosyncrasy to a certain drug, and not knowing at what time a person so affected may fall into our hands, we should always be prepared for the emergency, so when it does come we are masters of the situation. Artificial respiration is an old-time remedy, but one we always fall back upon in time of need. This should have been resorted to immediately, getting the patient's head down low in order to admit as much fresh air as possible into the lungs, so as to counteract the effect of the asphyxiation caused by the carbonic acid gas in the lungs, and a powerful heart stimulant given, such as glonoin or nitroglycerin and nitrate of amyl. Amyl nitrite is most prompt but of less duration in action, and is best given by inhalation. Nitroglycerin is less prompt and less violent, but has a more enduring action and is therefore more suitable for internal administration. Its headache is of intense frontal character and persists for hours after the other effects have passed off. Brandy or whisky hypodermically administered are also strong heart stimulants, although not so quick in action.

Chloroform should never be administered in the dental chair on account of the cramped position, it being absolutely necessary to have the patient in a recumbent position to have free use of all the muscles of respiration. The state of incomplete anesthesia is always

a dangerous one in which to perform any operation, *especially where the fifth nerve is implicated*, as in the extraction of teeth, since the irritation of a sensory nerve, the fifth in particular, permits the transmission of reflex inhibition over the pneumogastric to the heart, thus arresting the action of its motor ganglia. I mention this important fact because physicians are in the habit of saying, "It is only a tooth to be extracted, and so it is necessary to give only a small amount of chloroform, as the operation is quickly over."

An ounce of brandy, subcutaneous injection of $\frac{1}{6}$ grain of morphin and $\frac{1}{120}$ grain of atropin twenty minutes before commencing the inhalation, is of great utility in sustaining the heart and respiration, and in rendering the anesthesia more profound. Antidotes: artificial respiration, lower the head, elevate legs, inhalation of ammonia. hypodermic injections of brandy or digitalis, surface of chest to be smartly slapped with towel dipped in ice water, nitrite of amyl, nitroglycerin dropped on tongue, and application of galvanic battery. Cocain should never be used hypodermically in the mouth without the previous administration of a strong stimulant, such as brandy or whisky, liberally administered to offset the great depressing effect this drug has on the heart's action. Antidotal treatment in cocain poisoning consists of measures to rouse the heart, especially inhalation of nitrite of amyl and such restoratives as brandy, whisky, aromatic spirits of ammonia, strychnine, atropin, digitalis, and ether and chloroform when convulsions are present. Hot baths, hot drinks, hot sinapisms over the heart, and friction are often serviceable, also artificial respiration. Ether is seldom used directly in our line of work and it will suffice to say the antidotes are practically the same as those for chloroform.

Arsenious Acid. Local arsenious acid poisoning is something all of us have come in contact with more or less in making applications to devitalize pulps, by allowing some of the drug to escape onto the soft tissues, thereby causing an ulcer and perhaps sloughing to some extent. This condition, although seemingly slight in comparison where a patient's life is involved, is nevertheless one where we want an antidote and generally need it quickly. Wherever practicable the soft tissues should be curetted. Scarify freely and wipe out the wound with dyalized iron or muriated tincture of the same, and then cauterize with carbolic acid or iodin. This will have to be repeated for several days.

In conclusion I will say that it has been the greatest mystery in the world to me that there have not been hundreds of deaths in our profession, with the wholesale use of gas and so-called local anesthetics, with which latter we are deluged at the present day. And let me here enter my strongest protest against the use of any preparation which has not a published formula, for when you are ignorant of the poisons you are using, how can you know the antidote?

Discussion. Dr. J. H. Kennerly: Since hearing that Dr. Lindsley was to write this paper and that he intended to comment somewhat on the death which occurred a short time ago, a man came to see me about it. He stated that when he worked in the office the owner was in the habit of pouring several ounces of chloroform into the gas generator, so that he did not know how much chloroform he was administering with the gas.

Dr. C. H. Darby: A surgeon of some note recently gave me an antidote for chloroform syncope and stated that it would be successful in almost all cases. It is simply rectal dilation, and while an instrument is generally used, you can do without it. If you will notice what nerves you are dealing with in such cases you will see that there is a scientific reason why this should be effectual, and it is certainly worthy of trial.

Dr. Wm. Conrad: Gas should and will be used, and while it is not especially dangerous, it should be used only with intelligence and with the proper antidote at hand. This death occurred because the dentist in question was not prepared to administer the proper antidote immediately, and I believe every dentist should be well read on this subject. Cocain is very useful in certain cases, but more care need be used. In alarming cases of cocain poisoning, simply lay the patient flat on the floor. One common remedy not mentioned in the paper is aconite. If arsenious acid be used, the cavity and neighboring tissues should be wiped with dyalized tincture of iron. I have always used this and have never had a case where there was the slightest inclination to arsenic poisoning.

OLD FALSE TEETH.—A firm in England advertises to buy "old or disused false teeth."

TO STICK PAPER ON GLASS.—Make a paste out of 230 parts of mucilage, 20 parts of water and 2 or 3 parts of aluminum sulphate, dissolving the sulphate in the water before adding the mucilage.

Digests.

FOR POLISHING PLATE WORK. By Dr. T. Ledyard Smith, City of Mexico, Mex. For quickly cutting down or rough polishing rubber or gold plate-work, I find no better method than with the porte polisher, run with the dental engine. By removing the nut, a strip of three-fourths of an inch wide sandpaper or emery cloth may be slipped in the slot, and run as the same would be in a regular polishing lathe, only, this device run by the engine offers a more delicate result, as the instrument and handpiece are manipulated on the plate instead of the plate being manipulated against the polisher, as in the case with the lathe. This makes the result very different and the operation a pleasure. A plate may be made ready for a final polish in a very short time without the use of file or knife, and with a clean, delicate and artistic result.—*Items of Interest, July, 1898.*

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HINTS. By a Lazy Man. 1. I could write six pages instead of six lines on any subject, but I'm too tired and I never read or write anything that will spoil a yawn. * * * 2. Sharpened chisels dipped in oil trim vulcanite as easily as cutting soft chocolate. * * * 3. If you pack vulcanite warm *and wet*, it packs clean as well as easy. * * * 4. Save your eyes—and your patients—by wearing glasses when you need them. Go to an oculist—no one else—and find out if you need them. No man knows the *exact* condition of his own eyes any more than of his own teeth. * * * 5. Nothing better to soften the hands and cleanse nails and fingers quickly than hartshorn ammonia, 20 or 30 drops to a basin of water. Use to clean any blessed thing about your office. Cheap. *Dominion Journal, July, 1898.*

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COTTON POLISHING CONES. By D. V. Beacock, D.D.S. Brockville, Can. I have often been at a loss when finishing a plate with plain teeth to get anything that would polish between the teeth, but have found cotton-batting polishing cones to be just the thing. They can be made as small as one may require, cost nothing, cut very rapidly, as they hold the pumice or other abrasive material in the fibers, and can be made to hand in a moment of time. All one has to do is to take a bit of cotton-batting, the size

he requires the cone to be, hold it between the ends of the two forefingers and thumb against the point of screw or cone mandrel when running and it will be formed in an instant, then wet with polishing mixture and cut off the small end with scissors. I just happened to strike on it a short while since and was so pleased with it that I thought it might be of use to others.—*Ohio Dent. Jour., June, 1898.*

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ALLOWS NO INSURANCE FOR SEPTIC POISONING. In an action brought to recover on a policy of accident and life insurance the evidence tended to show that the insured, while suffering from some serious derangement of his system, which manifested itself among other ways by severe toothache, had two of his teeth extracted by a dentist; that there was a diseased condition of the membrane surrounding some of the teeth and a general foul condition of the mouth; that the teeth were extracted in the usual way, but it caused a rupture of the upper maxillary artery or a branch of it, from which a violent hemorrhage ensued, and to stop that the dentist plugged the cavities with cotton; that thereafter blood-poisoning ensued from the absorption into the system of some chemic poison supposed to have been caused by the propagation of disease germs in the cotton, the seat of the affection being where the teeth were extracted, which blood-poisoning progressed to a fatal determination. Under these circumstances the supreme court of Wisconsin reversed a judgment rendered against the insurance company. It holds, March 22, 1898, Kasten vs. Interstate Casualty Company, that, under a policy insuring a person against bodily injury sustained by external, violent and accidental means, with a provision for payment to a beneficiary or beneficiaries in case of death from such injuries within ninety days therefrom, independently of all other causes, and with a condition that the liability of the insurer shall not extend to injuries, fatal or otherwise, resulting wholly or in part from poison or anything accidentally or otherwise taken, administered, absorbed or inhaled, a death under such circumstances as above stated is within the condition set forth and creates no liability against the insurance company.

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SKILL AND CARE REQUIRED OF DENTISTS. Two distinct acts of malpractice were charged in the case of McCracken vs. Smathers, one in originally filling a tooth upon a live pulp, without

proper packing, and the other in improperly and unnecessarily boring through the jaw-bone after the party suing for damages had returned for treatment. Whether this malpractice, found by the jury, arose from the want of ordinary knowledge or skill, or the want of reasonable care on the part of the defendant, the supreme court of North Carolina says, March 15, 1898, is immaterial, as both are impliedly guaranteed by one offering his services to the public. The degree of care and skill required, it holds, is that possessed and exercised by the ordinary members of the profession. It need not be the highest skill and knowledge known to the profession, but it must be such as is ordinarily possessed by the average of the profession. It can not be measured simply by the profession in the neighborhood, as this standard of measurement would be entirely too variable and uncertain. "Neighborhood" might be construed into a very limited area. It might contain but few dentists, in sparsely settled sections perhaps only one or two. Both might be men of very inferior qualifications, and to say that they might set themselves up as the standard of a learned profession, and prove the standing of each by the ability of the other, continues the court, would be equally unjust to the profession and to its patients. The words "the neighborhood," as used in this connection, it further suggests, are essentially different from the phrases, "the same general neighborhood" or "the same general locality," which are found in some decisions from other states. But the supreme court expresses itself as satisfied with the instructions given the jury to the effect that the defendant would not be liable if he had exercised ordinary skill and care, and that, if he failed in either of these particulars, he would be responsible for the damages resulting from his own acts alone. Judgment for plaintiff affirmed.

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STEP-CHILD OF DENTISTRY. By Otto Bickel, D.D.S., New York. It is a sad but indisputable fact that the treatment of wounds caused by the extraction of teeth is a true step-child to dentistry. Whilst our profession does its utmost in striving for asepsis in the treatment of root-canals, we have almost forgotten to do our duty as to the wounds inflicted by the merciless dental forceps. This strange fact can be explained only if we consider that in most cases the patient does not return unless there is a severe complication. A fatal case which I saw lately causes me to take up the matter and

speak a few words of warning in behalf of this neglected part of dentistry.

We all know that the oral cavity is a perfect incubator for the culture of numerous kinds of microorganisms. But in spite of our knowledge, the extraction wound in most cases is left to the mercy of these minute enemies. The slight germicidal power of the saliva is a mere mechanical one—its continuous flow constantly disturbing the work of the dreaded bacilli. Furthermore, the locality of the dentist's operations renders it impossible to enjoy the blessing of thorough asepsis. Therefore it must be our earnest endeavor to make abundant use of antisepsis as far as possible. For instance, the patient's mouth presents stomatitis, or the teeth are neglected and unclean. Is it not a natural consequence that the extraction wound should show a suppurative tendency? Now in order to abort this tendency, should we not use a small ball of absorbent cotton saturated with some kind of antiseptic solution, thus closing out the intruding germs?

If a mouth is well cared for, a weak solution of permanganate of potash will not only promote healing, but will also abolish the disagreeable smell originating from the wound. But if we are confronted with a neglected mouth, or if difficult or several extractions have been performed, it is advisable and very necessary to utilize all our available means of antisepsis before the patient has left the chair. Many a case of necrosis will thus be avoided.

I have found the use of iodoform-ether applications, which have been recommended to the profession, reliable in all cases. This solution has not only a prophylactic, antiseptic effect, but also shows styptic qualities. When called upon it will never refuse to act. Animated by Hill's interesting paper about the introduction of Dr. Crede's new antiseptics into dentistry, I have tried the two silver-salts and consider Crede's preparation a very effective weapon in the battle against microorganisms.—*Items of Interest, June, 1898.*

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OXID OF ZINC AND EUGENOL. By Dr. S. Blair Luckie, Chester, Pa. In the report of the Committee on Materia Medica, from the New Jersey State Dental Society, there appeared under the name of "pulpol" a description of a new medicated cement for pulp-capping, the claim being that it is non-irritating, a bad conductor of heat, and a powerful antiseptic and anodyne, the chief

ingredients being oxid of zinc and eugenol. Its consistency should be less than doughy; will harden in from five to fifteen minutes so that a filling can be introduced. It also has the property of hardening as well under saliva as if kept dry.

I do not wish to claim priority of use, but feel constrained to testify to the satisfaction I have derived from a mixture of oxid of zinc and eugenol alone, not only as an intermediate stratum between the floor of deep seated cavities and the filling, but as a covering to dressings, especially when it is desirous to avoid pressure, and also as a filling where a non-irritating, thermal protector and antiseptic is designated.

If properly mixed, that is, as much of the oxid used as the fluid will take up without becoming crumbly, and a good article of zinc used, a filling can be inserted that will last as long as the best cement. In the mixing, a condition will appear as though no more of the oxid could be added without producing the crumbling alluded to, but by patting the mass with the spatula, plasticity will return. It will harden more rapidly in the mouth than on the mixing slab, and will retain its quality as a filling material better in the tooth, as what remains of the mix becomes brittle after the lapse of time, while the fillings will present good margins and show comparatively good edge strength.

I have now had an experience of over four years with it, and have noticed that fillings in the approximal surfaces of molars and bicuspids will show no wasting in the least for one, and in some cases for two years. It can also be used as a pulp-canal filling, by being pumped in the canal and forced to all parts with a cone of gutta-percha, filling the canal antiseptically and producing no irritation beyond the apex.—*Items of Interest, July, 1898.*

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PORCELAIN INLAYS BY THE METHOD INTRODUCED BY DR. N. S. JENKINS, DRESDEN. Demonstrated by K. A. Davenport, D.D.S., at the Bath meeting. The cavity was the mesial surface of the right maxillary central incisor, which was prepared so that an impression could be obtained. The impression was taken with No. 40 rolled gold, great care being used to get the gold well above the gum margin, which was accomplished by passing the edge of the gold well upon the neck of the adjoining tooth, the gold being pressed firmly into place by the aid of amadou and

burnishers. The demonstrator mentioned that even with great care in large cavities the cervical margin will be found sometimes to be exposed. In such a case a small piece of gold is pressed over the part while the original piece is in place, and both taken away together.

He also mentioned the method suggested by Professor Darby, in which he turns the edge of the gold on itself a thirty-second part of an inch, then placing floss silk under this edge, draws it well above the margin and ligates it to the tooth. Having got the gold perfectly in place and firmly held by amadou, the overlapping edge (in this case on the labial surface, which is most liable to interfere when removing) was trimmed to within a sixty-fourth part of an inch of the border by means of a sharp spoon excavator; a delicate explorer was used to remove the gold. Powdered asbestos was mixed with water in the platinum spoon and the impression gently invested therein.

The selected porcelain was placed in the impression and all slowly dried out, after which the cover was placed over the spoon in such a manner that the material could be easily watched while the fusing was completed. Three firings were required before the proper contour was secured. The filling was then tried in before the gold was removed, to made sure of the contour; more material, as explained, could be added if required, and if too full the excess could be cut away by means of a corundum wheel and fused again to secure a properly glazed surface. After removing the gold a groove was made entirely around the filling with a diamond disc; the cavity was also undercut in the usual manner. Both the cavity and filling were coated with cement and the filling pressed firmly into place by means of linen tape and wedge-shaped pieces of orange-wood, and held until the cement became slightly hardened.—*Jour. Brit. Dent. Assn., July, 1898.*

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DESTRUCTION OF PULP AND GOLD CROWN BY MERCURIC ACTION WITHIN AMALGAM. By W. T. McLean, M.D., D.D.S., Cincinnati. I have been greatly interested in the result produced by an amalgam filling inserted in a lower third molar, which was covered with a gold crown. The entire buccal surface of a right lower third molar was filled in March, 1894. The cavity extended below the gum margin and was not very deep.

A few months after its insertion the patient returned and complained of a peculiar and very unpleasant taste about this particular tooth; it became very offensive. I attributed the annoyance to oxidation or an acid condition of the fluids of the mouth affecting the amalgam, and I suggested that crowning the tooth with gold would no doubt prevent any further inconvenience, thinking that more convenient as well as more permanent. The patient permitted the operation as suggested and it was entirely successful; the unpleasantness became entirely eliminated. This patient returned a few weeks ago, being absent about four years—quite a long time without consulting a dentist. Her visit was for the purpose of having her teeth examined, on account of some slight inconvenience. Imagine my amazement when I beheld the gold crown entirely disintegrated and porosity everywhere noticeable, and the slightest effort removed it. This was surely the result of a physical and possibly a physiological action of mercury. I have always felt that there are idiosyncrasies whereby amalgam or mercurial medicaments are contraindicated, and I believe that this experience will materially assist to bear out this *hardly settled question.* It has taken about four years for this change to occur—pulp is dead, incipient decay around a part of amalgam filling.

I have reprepared cavity, cleansed and antiseptically treated canals, filled them up with powdered asbestos, saturated with a 50 per cent solution of silver nitrate; filled tooth with gutta-percha, and made new gold crown, 21-k., and set it. Saw patient recently and she is enjoying life from a masticatory standpoint, and I am thinking, conscientiously and scientifically, which is to blame, McLean or mercury? Some stomatological brother will confer a favor if he will explain.—*Ohio Dental Journal, July, 1898.*

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INFLUENCE OF MENTAL FACTORS IN CAUSING DEATH FROM ANESTHETICS. By Robert Ballard, M.R.C.S. Eng., L.R.C.P. Lond. In some cases operative measures are decided upon and the patient's consent obtained three or four days before the operation is finally performed, and during the intervening sleepless nights and long weary hours of waiting in bed the ever-present idea of operation looms larger and larger in the patient's mind. With sickening reiteration he dwells again and again upon what he may imagine to be the details of the operation, and

endures in anticipation a mental agony out of all proportion to the actual facts. Is it rash to assert that such a patient will be brought to the table with nervous and circulatory systems heavily handicapped for the strain which will be put upon them. The following case which occurred in my own practice well illustrates the grave condition which may be produced by fear and anxiety. A woman, aged 23 years, single, had suffered from frequently recurring attacks of appendicitis of considerable severity, and it was decided during a period of quiescence to perform laparotomy for the removal of the diseased appendix. The patient was a pale, nervous woman, much reduced in health by her former attacks, and with a marked neurotic family history on the mother's side. I first saw her the morning before the operation. She was then evidently anxious, but evinced, so far as I could judge, no signs of great mental distress. The pulse was 98, dropping ten minutes later to 89. The heart was normal in every respect, and the sounds, though hurried, were clear. On asking her to sit up I fancied I could detect a faint hæmic murmur at the pulmonary base. An examination of the chest gave negative results. When I left the pulse was 84, having dropped 14 in less than half an hour. I did not see her again until the following day, when she was brought into the next room for operation. Her condition was then typical. The heightened color, hurried irregular respiration, compressed lips and fluttering eyelids spoke of the fear and suppressed excitement from which she was suffering. The pulse was 104, and the heaving impulse of the heart could not only be felt but seen. The superficial veins of the neck were slightly engorged, and on careful scrutiny showed a faint but distinct pulsation. Indeed, her condition was so serious and the engorgement of the right side of the heart so obvious that I was in doubt as to whether it was justifiable to operate at all. At the last moment I decided to give gas and ether, in spite of a slight bronchial catarrh from which the patient had been suffering. The sight of the inhaler added the last straw to her terror, and when on the table she begged that the operation might proceed without an anesthetic. When fully under the influence of nitrous oxid the signs of engorgement disappeared, the pulse rate fell, and she eventually took the ether well and made a good recovery. The chief element of danger in these cases is the profound disturbance of the circulation, which commences in many cases some days pre-

viously and persists until the patient is well under the influence of an anesthetic. In the worst cases there are signs of serious embarrassment of the right side of the heart, and in two cases I have observed an undoubted temporary tricuspid regurgitation—physiological, no doubt, but none the less dangerous. It may be urged that inasmuch as this condition passes away as consciousness is lost its gravity has been exaggerated; but it is when the patient is still conscious and is struggling and holding his breath that the greatest stress is laid upon the heart and the occurrence of sudden syncope is most to be feared.—*Lancet.*

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TINFOIL MATRICES. By W. B. P., F.R.C.S., Dublin, Ireland. Oxyphosphate fillings are a daily necessity, and as it is not always advisable to use rubber-dam in the case of irritable or very young patients, some other means of excluding moisture must be sought. During the past ten years I have been able to keep such fillings damp-proof during the progress of the chemical union that causes consolidation of the filling in the tooth cavity, by the aid of pieces of tinfoil. The cavity in the tooth is prepared in a suitable manner and the margins carefully shaped. The tooth cavity is filled with absorbent cotton carefully packed into it, after the use of the hot-air syringe. A piece of tinfoil of suitable thickness is cut out, measuring one inch or one inch and one-half square, and placed in readiness. The filling is carefully mixed into a pasty mass. The cotton wall is removed, and the plastic filling gently packed into every part of the cavity. Some overplus of the filling left on the mixing slab is placed on the piece of tinfoil in a suitable position. The tinfoil is quickly placed over tooth and cavity and folded over the lingual and buccal surface, or the palatine or buccal surface as the case may be. The tinfoil is gently brought into position with the forefinger and thumb, or with the forefingers of right and left hand. A stroking action of a right hand finger, while left index finger holds the tinfoil in position within or without the dental arch, will enable the filling to be solidly pressed into place in the cavity of the teeth. The excess of material is thus squeezed over the teeth, and the tinfoil can then be gently burnished over the filling so as to make a contour suitable to the case. In the case of bicuspids and molars, the patient can supplement the procedures of the dentist by steadily closing the bite on the tinfoil, and thus give the dentist a true con-

tour of the masticating surface. In many cases where the approximal cavities in maxillary incisors have to be filled, the tinfoil can be folded double and passed between the teeth before the filling is placed in the cavity. This flexible band of metal can be gently drawn into place *round* the tooth, and thus cemented on the enamel surface on each side of the cavity, so that the moisture is completely excluded during setting of filling. Once the filling sets hard the tinfoil can be peeled or scraped off the tooth or teeth, and the dentist will find, if these details have been skillfully and gently carried out, a well contoured filling with a smooth surface that needs very little final trimming. Sometimes I place a band of tinfoil round a tooth and then pack in the oxyphosphate filling. The band is brought to its intended place, and I then envelope tooth and band with a square piece of tinfoil smeared with the filling. This is rubbed or folded into shape and position, and all moisture is excluded. With young children tinfoil used in this way will be found of great service to the dentist, as it does not give them any pain or discomfort, while at the same time, the filling is kept protected from action of saliva during progress of setting. I am of opinion that oxyphosphate fillings treated in this way will be found to be harder and more durable under ordinary conditions than when the plastic mass is packed and burnished into position and contoured with oiled instruments.

Few young children bear with patience the use of the rubber-dam, and as a willing patient of ten years should be the rule rather than the exception, I offer my experience in the hope that it will meet a want in ordinary practice that is not altogether filled by the use of rubber-dam, napkins, absorbent paper, or even saliva injector. The tinfoil commonly used for filling teeth is much too thin for this purpose; I prefer to use tinfoil somewhat of the thickness of writing-paper, as it will bear the necessary pressure and manipulation without breaking. Sometimes I fold the square of tinfoil into a strip or band of three or four thicknesses, as may suit the space between the teeth, and thus gain sufficient support to bring pressure to make a contour filling above or below the gum, as the case may be in the maxilla or mandable. A few experiments on some natural teeth set in plaster will show anyone who cares to carry out this procedure that tinfoil can be made a valuable adjunct in many cases where oxyphosphate plastic fillings have to be used. I showed this

method to several dental friends at my house last August, and they were much pleased with the adaptability of the tinfoil to the purposes I have described.—*Dominion Dental Journal, July, 1898.*

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SILVER NITRATE IN THE TREATMENT OF PULPLESS TEETH. By Dr. L. G. Noel, Nashville, Tenn. Read before Miss. State Dental Assn., April 7, 1898. It cannot be denied that good results may be obtained with many other agents, but it is doubtful if absolute disinfection and sterilization of the dentin can be so quickly obtained with any other drug as with the silver nitrate. Its solubility makes it more penetrating than anything else that has been exploited in this practice; but this quality, and its blackening effects upon the teeth, will almost limit its employment to the molars. True it may be used in the treatment of lower bicuspids and in many places where discoloration has already occurred as a result of chemical changes in pulp tissue, and where it is not deemed especially objectionable its application may be extended to other teeth. Now a word as to the method of applying it: Having cleansed the pulp-canals of septic matter as thoroughly as possible, and removed as much of the softened and septic dentin from the walls of the pulp-canals as can be taken away with impunity, and having allayed all peridental inflammation to the point of toleration of slight percussion, we put on the rubber-dam, and after washing out all other medicaments, apply the silver nitrate as follows: Having obtained from the druggist a short, wide-mouth bottle of blue or green glass, containing the finely pulverized crystals, we take a smooth platinoid probe (a gold probe would probably be better, but good results may be had with steel or platinoid), and wrapping a fiber of cotton loosely around the point, it is first dipped into water, then into the powdered nitrate, and carried as far into the canal as it will go. The probe may then be withdrawn, leaving the cotton fiber with its charge of silver nitrate behind. The probe is now used as a plugger, and the cotton pushed as far into the canal as it will go. This process is repeated until the canals are packed as full as they can be; then a pledget of cotton is moistened and rolled in the powdered nitrate and pushed into the pulp-chamber. The cavity of entrance may now be clothed with some temporary stopping and the case dismissed for a week or two.

Upon the return of the patient the whole may be removed and the

roots filled. Such is the solubility and penetrating power of this agent that we believe it will filter through the dentin and render aseptic any portions of the roots traversed by canals so tortuous or flattened as to elude the cleansing instruments of the operator. Our faith goes farther. We believe that the cotton (if raw cotton) might be left in the canals with such a charge of silver nitrate, and the permanent filling introduced over it, with as good result as can be obtained by other methods of root-filling. We are not yet prepared to adopt this as a practice, nor to recommend it to others, but we have been trying it in some cases where it has been impossible to obtain that degree of dryness necessary to make a good root-filling or gutta-percha or oxychlorid of zinc, and so far the results have been very gratifying. In many of the buccal roots of the superior molars, where nothing but a mere fiber of cotton can be placed, we would say saturate this fiber with silver nitrate and leave it, using oxychlorid of zinc, or some more solid filling-material for the permanent filling of the palatine canal. Perhaps the most gratifying results that we have yet obtained have been in the treatment of pulpless deciduous teeth. Our method of procedure has been as follows: After opening the pulp-chamber and allaying the soreness by the use of dressings of old wood creosote, we fill the pulp-chamber about half full of cotton, moistened and rolled in pulverized silver nitrate. A temporary stopping is placed over this and it is left for ten days. Upon the return of the patient the dressing is removed, the carious dentin excavated from the crown of the tooth, and after syringing out carefully with some antiseptic and bathing it with creosote, the whole cavity is filled with copper amalgam, without any effort at cleansing and filling the pulp-canals.

We have not had to tap a single case to relieve alveolar abscess where the above treatment has been used; however, it is a comparatively new practice, and we admit that a few short months is insufficient to establish it. The roots of these deciduous molars being usually greatly wasted by the process of resorption, and the canals always difficult to broach, no one has had much success in cleansing and filling them, therefore we believe all will hail with delight a method that gives success without these baffling efforts. That eminent writer, Dr. Safford G. Perry, has recommended merely cleansing and disinfecting the pulp-chambers: then if trouble arises after filling, tapping the roots to give exit to gas. Who has not

felt that the boring of a tap-hole was a clumsy way to relieve a very regrettable septic condition? Our silver nitrate cases (and we have quite a number) have so far exhibited no symptoms of septic trouble. Not the least recommendation for practice is the ease and speed with which it may be executed. For the copper amalgam filling, we will say that its greatest value is for the deciduous teeth, and in these cases it is specially indicated.—*Dental Headlight, July, 1898.*

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CATARRH OF THE ANTRUM OF HIGHMORE. By H. I. Jones, M.D., San Francisco. Catarrh of the antrum is frequently overlooked and mistaken for an affection of the nasal mucous membrane. When an abundant fetid discharge runs from the nose, especially when it is intermittent, the existence of the disease of the antrum should be suspected, and a careful search with a nasal speculum and a good light for the welling up of the secretion through the foramen in the middle meatus. If this matter is wiped away it is apt to return, and a pulsating light reflex is occasionally observed similar to that seen in perforation of the drumhead during acute suppurative inflammation of the middle ear.

The mucous membrane lining the antrum of Highmore is liable to suppurative inflammation, and a collection of pus which may completely or partially fill the cavity. This cavity is liable to be attacked from either one or two sources: from an extension of an inflammation of a tooth, or from some diseased condition of the nose.

From the location of the antrum, immediately above the bicuspid and molar teeth, the roots of which perforate the floor, and from its more-or-less communication with the nasal cavity, it would be expected that disease of its lining membrane would be frequent, resulting either from an affection of the teeth or extending from the nasal mucous membrane, which is often inflamed.

Authorities are divided as to the most common cause. Heath, Simon, Frankel, Moritz and others state that disease of the teeth is the most common cause of this affection. On the other hand, equally competent men, Bosworth, Hartman and others, maintain that the cause is from disease of the nasal cavities. The majority of cases in my own practice have been due either to external injury or disease from the teeth.

The normal opening from the cavity into the middle meatus varies from the size of a crow-quill to an opening nearly large enough to

admit the tip of the little finger. In the latter condition the product of inflammation may be readily discharged and spontaneous cure may be expected, but when the orifice is small it may readily become closed and the pent-up secretion become purulent and offensive. If there is free exit into the nasal cavity the patient will experience but little pain. If the secretion be pent-up he will suffer from tenderness of the teeth, cheek, orbit or frontal sinuses.

The discharge is most abundant early in the morning, after the patient has been long in the recumbent position. In chronic cases the discharge is purulent and generally exceedingly offensive. The patient complains of bad odor to the breath, and a discharge of pus from one side of the nose. Some annoyance will be felt from the offensive pus which trickles into the throat during sleep. Persistent discharge from one nostril is usually due either to a foreign body or to the disease under consideration; nasal polypi or disease of the frontal sinuses may cause similar symptoms.

When pain is in the region of the antrum, and an offensive purulent discharge from the nares of the corresponding side, there can be little doubt about the diagnosis. In all cases careful inspection of the nose and mouth must be made. If the inferior turbinated bone is much swollen, a little cocain applied will reduce the tumefaction, and with the aid of a good light, reflector and speculum the diagnosis will be easily made.

The only other affection with which disease of the antrum is liable to conflict is suppurative inflammation of the ethmoidal cells. In the latter there is much less pain, and the discharge from the nose is less copious, and on inspection the pus is found to trickle down at the posterior end of the inferior turbinated, instead of across the middle.

Another method or aid to diagnosis is by electric illumination of the antrum, by placing a four-candle-power electric light in the patient's mouth in a dark room. It is thus described by Davidsohn, who places less reliance on the illumination of the antrum and more on the illumination of the eye as a diagnostic aid in abscess of this cavity: "If the cavity should contain a small quantity of pus, the cavity itself may be illuminated while the corresponding eye remains dark." I myself have used this method for some time, and can verify its usefulness.

With reference to treatment in acute cases, fomentation and local

blood-letting; if suppuration has taken place, free exit of the pus through the alveolar space. If a diseased tooth is found to be the cause, it should be extracted, and the opening left by the fang enlarged so as to have free drainage. If the teeth are sound, it is best to draw the first molar, as its socket is deeper than the others and most liable to decay. If patient has already lost the teeth, the antrum can be reached through the space left. There is a diversity of opinion about the method of surgical treatment of suppurative inflammation of the antrum; one method of which is highly recommended, that of washing out and injecting antiseptics through the natural opening; if the opening is large it is easy, but when the opening is small it is very difficult, let alone painful to perform. I have tried it in many cases without success, being obliged to resort to the drill.

Sir Astley Cooper, the celebrated English surgeon, opened the antrum by extracting a tooth and entering the cavity by the hole left by the fangs. In using a bone-drill care should be taken lest it plunge in too suddenly and wound some other parts. The opening should be drilled on a line with the internal canthus of the eye of the same side, provided the antrum is of normal shape, and no high-arched palate. Make the opening so that you can put the end of your little finger in so as to make a thorough exploration. Wash it out with some antiseptic solution. I am in the habit of using zymocid and warm water, then peroxid of hydrogen and every other day with 5-per-cent solution of nitrate of silver, then packing it full with moist iodoform gauze. Constitutional treatment must not be overlooked.—*Pacific Medico Dental Gazette, July, 1898.*

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IMPRESSIONS. By Dr. I. P. Wilson, Burlington, Iowa. Read before Northern Iowa Dental Society, Sept. 1897. A correct impression is an absolute necessity in securing satisfactory results in the construction of a set of artificial teeth. We must begin right or we cannot expect to end right. Doubt should never be entertained regarding this foundation work. An impression that calls from the operator the expression, "I *guess* that will do," should be promptly condemned. We ought to *know* that it will do before dismissing our patient. When there is doubt there is apprehension from first to last, and when the work is completed and the plate introduced into the mouth our worst fears are usually realized. A

plate that sticks tightly to the mouth does not always mean a well-fitting plate. Wax impressions are not reliable. We may secure a fair impression of the palatine surface, but usually the buccal margins are faulty.

Evils of Suction Plates. A set of teeth made from such an impression with a huge "air-chamber" may be made to adhere so firmly that it can be removed only with difficulty. In such cases I have heard dentists say with an air of triumph, "How is that for a fit?" and the poor deluded patient would perhaps think that was a splendid fit. Such a plate cannot be worn with comfort. The sensation ensuing must be similar to that experienced in the process of "cupping." Indeed, the same result is sometimes produced, and I have more than once known of a blister being drawn by this kind of a suction cavity. If the patient has the fortitude to endure this drawing process for a considerable length of time, an abnormal development of tissue will fill the cavity. It is necessary to have only a fair impression of the central part of the roof of the mouth to secure the results referred to above.

In my early practice, more than thirty years ago, I used wax exclusively for taking impressions. I also used large air-chambers; hence I have an experimental knowledge of what I am writing. I believe that plaster of paris is used almost exclusively at the present time for full upper sets, while other preparations, such as wax or modeling compound, are still used by some for full underdentures and for all partial sets. In my own practice I use plaster of paris exclusively for both full and partial plates.

Management of Special Cases. The condition of the mouth is the first consideration and should be carefully examined before an impression is taken. If the texture of the gums, the hard palate and the alveolar ridge are found to be in a normal state, the taking of an impression is greatly simplified. But if there is a sponginess of the anterior portion of the alveolar ridge, with a hard bony structure along the median line, the case becomes more difficult to manage. An impression-cup that will pass freely around the gums should be selected. If the arch is high a little soft wax should be placed along the posterior margin of the cup before introducing the plaster, which should be mixed thick enough to produce slight pressure upon the soft yielding tissues. In some cases we find the anterior portion of the gums as soft and yielding as the muscles of

the cheek. If the plaster is mixed too thin and the impression is taken without any pressure upon these soft parts, the plate when completed will rest upon the hard palate, with no support upon the spongy gums. Such a plate will rock because of uneven pressure. The impression should be so taken that the soft as well as the hard tissues will be in a measure unyielding when the dentures are in place. Of course it will not do to force the spongy gums back in taking the impression so that they will act as a spring upon the plate. Either extreme should be avoided. When the impression is in place the lips should be raised gently to expel the air that may have been shut in, after which they should be drawn down with sufficient force to mark the folds of mucous membrane in the impression, or they will act as a spring in dislodging the plate.

When there are undercuts in the gums, care must be taken by some means to force the plaster into the recesses, and then before crystallization has fully taken place the impression must be removed, which will usually break into a number of pieces, but these may be put together again like a broken dish. Sandarac varnish will unite the parts perfectly. If the plaster becomes too hard a knife may be used in cutting grooves and breaking into sections the binding parts.

Taking impressions for partial sets is much more difficult and an accurate impression is an absolute necessity. An impression taken with any material that will yield or bend without breaking is unreliable and will result in an ill-fitting plate.

Plaster should be mixed thick enough to hold to the cup when turned upside down. A large number of impression-cups of various sizes and forms should be possessed by every dentist.

In some cases we find a bony prominence in the roof of the mouth which is hard and unyielding, and unless provision is made for this objectionable feature of the case a failure may be expected. Very soft plaster should never be used in taking such impressions, but plaster stiff enough to produce some pressure upon the soft parts involved. Judicious scraping of the model where the parts are soft, or a layer or two of heavy tin-foil over the hard parts will help obviate the difficulty. When the bony prominence does not extend back to the soft palate, the difficulty is easily remedied by forming a thin suction cavity over the entire bony surface, so the plate will not come in contact with it.

Before taking an impression the mouth should be rinsed thoroughly with cold water, and if the saliva is thick and ropy salt should be added to the water.

Impressions Without Cups. It becomes necessary occasionally to do away with an impression-cup in partial undersets, especially when any of the anterior teeth are to be supplied. In such cases I frequently take the impression only of the lingual surfaces of the teeth and gums, allowing the plaster to pass into the places of the missing teeth, but not through to the labial side. This may be accomplished by carrying the plaster on a spatula to the desired location. I prefer, however, to take a roll of wax and press against the lingual surfaces of the gums and teeth, then remove and dress it down, forming a deep longitudinal concavity in the wax next to the teeth, which I fill with plaster and put into place against the teeth. Usually the wax will come away from the plaster in removing it from the mouth, but body enough is left in the plaster to push it back into the mouth, frequently breaking it into several pieces, which may be readily glued together. This will give a perfect impression of the parts with which plate is to come in contact, and most satisfactory results are obtained.—*Items of Interest, June, 1898.*

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SCHEME FOR DETERMINING THE AMOUNT OF DRUG IN EACH DOSE OF ANY PREPARATION OF THAT DRUG. By John E. Groff, Ph.G., Providence, R. I. Many of our young medical practitioners find themselves handicapped at the very outset of their careers by ignorance of drugs and their preparations and the doses of them. To this ignorance more than to any other one thing may be attributed the extensive prescription of ready-made medicines in the form of elixirs, tablets, etc., which flood the market at the present day.

It has been the writer's pleasure to act as instructor in the particular branch of materia medica relating to the composition and strength of the official preparations and their doses to classes of young medical graduates during their hospital training. He has long noticed that physicians prescribe the various tinctures, fluid extracts, etc., without really knowing just how much drug was represented by the amount of preparation prescribed. To illustrate: He knows three minims to be the dose of tincture of aconite root, but he does not generally know whether he may double or

treble the dose, because he does not know how much aconite root is represented by each minim of the tincture, nor does he know of any general way to find out such facts.

To overcome this difficulty the writer has devised the following rules which, with the tables given, are easily memorized and will be found of immediate and everyday value. They have been in use for five years by both pharmacists and physicians, and the best proof of their utility is shown by the eagerness with which they are received, the readiness with which they are applied and the continuance of their use. I divide the commonly used drugs into three classes: First, those given in doses of from ½ grain to 2 grains. They are aconite root, cochineal, cantharides, digitalis, opium, physostigma and strophanthus. The drugs of the second class are given in doses of from 1 grain to 3 grains. They are aloes, belladonna, cannabis indica, capsicum, colocynth, conium, gamboge, gelsemium, hyoscyamus, ipecac, lobelia, musk, nux vomica, pulsatilla, rhus toxicodendron, sabina, squill, stramonium, tobacco and veratrum. All the rest of the official vegetable drugs are given in doses of from 5 to 30 grains.

Be it remembered that dose tables are founded upon experience, and the experience of past years has had to do with improperly cared for and consequently weak drugs, and the doses were made large. The doses given above have been carefully collected from well-recognized sources and are correct when applied to drugs answering the official requirements.

The first list of drugs should be memorized; the second need not be, but it should be read over several times, that the names in it may become sufficiently fixed in the mind to be recognized on occasion. When a drug is to be used, one will recognize to which of the three classes it belongs, even though one does not have them at his tongue's end.

The following list of percentage strengths should be memorized: The poisonous liquors are the arsenical liquors—Fowler's and Donovan's solutions and solution of arsenious acid. They are all 1 per cent in strength. * * * The fluid extracts with one exception are 100 per cent in strength. * * * The tinctures—that is, the poisonous tinctures—vary in strength and are placed in classes: Camphorated tincture of opium, $\frac{1}{10}$ of 1 per cent. * * * Tincture of nux vomica, 2 per cent of extract. (The extracts may be con-

sidered as four times the strength of the drug and the dose one-fourth as much.) * * * Five-per-cent tinctures—Cantharides, strophanthus. * * * Ten-per-cent tinctures—Opium, deodorized opium, ipecac and opium. * * * Fifteen-per-cent tinctures—Belladonna, cannabis indica, colchicum seed, digitalis, gelsemium, hyoscyamus, physostigma, squill, stramonium. * * * Thirty-five-per-cent tincture—Aconite root. * * * Forty-per-cent tincture—Veratrum virid. * * * All the fluid preparations of opium have been made 10 per cent excepting paregoric, the wine, and the vinegar. Also the powder of ipecac and opium. * * * The only poisonous official infusion is that of digitalis, the strength of which is 1½ per cent. * * * Among the wines we have antimony, $\frac{4}{10}$ per cent; colchicum seed, 15 per cent; colchicum root, 40 per cent; opium, 10 per cent.

When we speak of a preparation as being ½, 1, 5, 10 or 50 per cent in strength, we are to understand that the activity of ½ or 1 grain, or 5, or 10, or 50 grains of drug is contained in every $\frac{1}{100}$ minims of the preparation. One minim therefore contains $\frac{1}{100}$ of that quantity. Knowing how much drug is represented by one minim, we may easily calculate how much is held in solution by any number of minims.

Example No. 1.—It is desired to give 5 grains of belladonna in the form of tincture; how much tincture must be used? By our dose table we learn that 5 grains of good drug is rather a large dose; but the tincture being a 15-per-cent tincture, there are 15 grains of drug in every 100 minims. In one minim there is $\frac{1}{100}$ of that amount, or $\frac{15}{100}$ of a grain, or $\frac{1}{6}$ of a grain to each minim. (It is between $\frac{1}{6}$ and $\frac{1}{7}$, but for uniformity we call it $\frac{1}{6}$.) In 5 grains, the amount desired, there are $\frac{30}{6}$, or the amount represented by 30 minims of the tincture.

Example No. 2.—It is desired to give 2 grains of belladonna; how much tincture represents that amount? All 15-per-cent tinctures contain 15 grains of drug in every 100 minims, or $\frac{1}{6}$ grain to 1 minim. And as there are $\frac{12}{6}$ of a grain in 2 grains, 12 minims of the tincture of belladonna will represent $\frac{12}{6}$, or 2 grains of the drug. Two minims of the fluid extract, each minim representing 1 grain of the drug, serves the same purpose. One-half grain of the solid extract, which is four times stronger than the drug, would also represent 2 grains of the drug if it is desired in pill form.

Example No. 3.—The physician finds by his pocket-dose list that the tincture of aconite is dosed at from ½ to 5 minims. How much drug does that represent? The tincture is 35 per cent in strength, or the active power of 35 grains of drug is contained in every 100 minims of the tincture. One minim contains $\frac{1}{100}$ of 35 grains, or $\frac{35}{100}$ of a grain, or ⅓. Five minims contain $\frac{5}{3}$, or 1 grain and ⅔. And as our drug is dosed at from ½ to 2 grains, 5 minims are a safe dose.

From these examples it will be seen that the doctor may start out definitely. As it is, he gives 5 minims and increases or diminishes, according to circumstances, and knows not in the end how much drug he has been using. By observing these rules he always knows what he is giving. In the same manner, after a very little application the physician may deal with all the various preparations.

A 1-per-cent solution contains $\frac{1}{100}$ grain of drug to the minim, and $\frac{1}{20}$ grain of arsenic, or $\frac{5}{100}$, or 5 minims of Fowler's solution, are one and the same quantity. * * * A 2-per-cent fluid contains $\frac{1}{50}$ grain of drug in each minim; 50 minims = 1 grain; 5 minims = $\frac{1}{10}$ grain. * * * A 5-per-cent fluid contains $\frac{1}{20}$ grain to each minim; 20 minims = 1 grain. * * * A 10-per-cent fluid contains $\frac{1}{10}$ grain of drug in each minim, and 1 grain or $\frac{10}{10}$ will be found in each 10 minims.

In this manner one may be exact in his dosage. If, for instance, he directs 6 minims of tincture of aconite to be given, and by mistake 12 are given, he knows just how much to worry; whereas if he knew not how many grains of drug that amount represented, he would be worried very much for several hours.

It is well to remember that both the tincture and the fluid extract of nux vomica are exceptions. The fluid extract contains 1½ per cent of alkaloidal strychnin, or about $\frac{1}{30}$ of a grain of strychnin to each minim. The tincture contains 2 per cent of extract or $\frac{1}{50}$ grain to each minim. The dose of the extract is one-fourth that of the drug, or from ⅛ to ½ grain. The corresponding dose of the tincture would be from 6 to 25 minims.

It is convenient sometimes to know how much drug is represented by ¼ or ½ an ounce or 1 ounce of a fluid preparation. The percentage strength being known, multiply by 5; the product is the approximate number of grains in each fluid ounce.

Infusion of digitalis is 1½ per cent. Multiplied by 5, we have

7½ grains to the ounce, or about 1 grain to the drachm. A 2-per-cent tincture contains about 10 grains to the ounce; a 5-per-cent tincture about 25 grains, etc.—*Medical Record, Aug. 6, 1898.*

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WHY COAGULANTS DIFFUSE THROUGH DENTIN. By E. Lawley York, D.D.S., F.R.M.S. (Eng.) Read before Illinois State Dental Society, May, 1898. About a year ago I had the honor to present to this society a paper on "The Diffusibility of Coagulants in Dentin." The deductions I drew and the experiments I exhibited at the time showed you conclusively that carbolic acid would diffuse through dentin. Hearing that I was continuing this line of investigation the chairman of your executive committee did me the honor to request me to read another paper along the same lines, and from the generous and kindly manner in which you received my former effort, I consented. The following is the result of my experiments extending over the past year.

If you remember, I stated at that time that I found that there was greater rapidity in the diffusion of carbolic acid through the dentin of a tooth that had contained a putrescent pulp (four to eight hours). This occurred not once only but in every case, and it set me thinking. Why was there greater rapidity of diffusion in such a tooth and less in one that had contained up to the time of treatment a normal pulp; in the latter we had to deal with a tooth that had so far not undergone any pathological changes, either in the contents of the pulp chamber or the dentinal tubuli, all the albumin that is normally in a tooth being there intact, whereas in the tooth the pulp of which had died, and as a consequence undergone the process of putrefaction and the consequent formation of an innumerable number of end products, we had a totally different condition to deal with. In the first condition we might have an infinitesimal quantity of albumin to deal with, as I will show you later, whereas in the latter we have none, as I will now endeavor to demonstrate.

Many mouth-bacteria, as well as the majority of the pyogenic and putrefactive bacteria, have the faculty of dissolving coagulated albumin or albuminous substances, of peptonizing or converting them into soluble substances, just as albumin is converted into soluble peptones by the pepsin of the gastric juice. Microorganisms nourish themselves only by substances in a state of solution, and if

we present them solid substances they must first liquify these substances before they can make any use of them for their own nourishment.

After the death of a pulp it is invaded by various bacteria, strictly saprogenic as well as pathogenic, the result of which is that the pulp becomes a foul, semifluid mass. This putrefactive decomposition of albuminous matter is effected by a great variety of microorganisms and give rise to a great variety of products, some of which are volatile and are characterized by their offensive odors. This putrescence was the result of first the splitting up of the albumins into peptones, which according to Flugge may be effected by a number of microorganisms, then the splitting up of the peptones into a large number of gases, acids, bases and salts. Among the products of putrefactive fermentation known to chemists are the following: Carbon dioxid, hydrogen, nitrogen, hydro-sulphuric acid, phosphureted hydrogen, methane, formic acid, acetic acid, butyric acid, valerianic acid, palmitic acid, crotonic acid, etc., etc.

A few words on ptomaines may not be out of place. It is a name suggested by the Italian toxicologist, Selmi, and derived from the Greek word *ptoma*, meaning a cadaver. A ptomaine may be defined as an organic chemical compound, basic in character, and formed by the action of bacteria on nitrogenous matter. They have also been called animal alkaloids, but this is a misnomer, because in the first place some of them have been found in the putrefaction of vegetable matter, and in the second place the term animal alkaloid is more properly restricted to the leucomaines, those basic substances which result from tissue metabolism. While some of the ptomaines are highly poisonous, this is not an essential property, and others are entirely inert. Hence the severe and complicated conditions following in some cases a blind abscess or the opening of a putrescent pulp-canal, where we have exercised the greatest care. Since all putrefaction is due to the action of bacteria, it follows that all ptomaines result from the growth of these organisms. The kind of ptomaine formed will depend upon the individual bacterium engaged in its production, the nature of the material being acted upon, and the conditions under which the putrefaction goes on, such as the temperature, the amount of oxygen present, and the duration of the process. Ptomaines are the transition products in the process of putrefaction. They are temporary

forms through which matter passes while it is being transformed by the activity of bacterial life from the organic to the inorganic state. Complex organic substances such as muscle and brain are broken up into less complex molecules, and so the process of chemic division goes on until the simple and well-known final products, carbonic acid, ammonia and water result.

It is an established fact and will be borne out by the experiments which I will give you later, that the end products of albumin decomposition or putrefaction are no longer coagulable. I previously stated in this paper that the first step in the process of putrefaction is the transformation of the albumins into peptones. Now these peptones are not coagulable; for example, if you take pepsin and add it to serum albumin and allow it to digest at body temperature, you will find it converted into peptones, etc., which are not coagulable. This is precisely the same condition that we find produced by the action of peptonizing bacteria upon proteid matter. (Here exhibit tubes of decomposed serum albumin and tubes of serum albumin to which has been added pepsin.) On the addition of carbolic acid they do not coagulate. Now, how does carbolic acid act upon these substances? Does it coagulate the orificial ends of the dentinal tubuli and seal in all this poisonous matter? Most emphatically, no. The carbolic acid will penetrate as well as anything else you may use.

Let us now take another view of this much mooted question and see how the carbolic acid will act on the dentin of a tooth from which you have removed a normal pulp, one in which the albumin has not undergone decomposition. I stated earlier in my paper that carbolic acid diffused through the dentin of a tooth from which I had removed a normal pulp a trifle slower than one which contained a putrescent pulp. The reason for that was this: That carbolic acid did coagulate the trace of albumin that was there, but the former (carbolic acid) being in excess the coagulum was redissolved again. I will now show you capillary tubes filled with serum albumin (human), native albumin, and artificial serum albumin, and you will notice the coagulation proceeds slowly, and following behind a trifle slower you will see that the coagulum is being redissolved again. This is precisely the thing that occurs in the dentinal tubuli, only we have such a minute quantity of albumin in the tooth structure that it is hardly a factor.

To demonstrate the latter statement to your satisfaction I will give in detail some experiments made to determine the quantity of albumin in a tooth.

Determination of albumin in teeth. The teeth are first thoroughly scraped, removing as much of the adhering particles as possible. They are then carefully brushed with alcohol, which coagulates the albumin on exterior of the teeth. After the teeth are dry, they are finely pulverized. To this pulverized substance (about ten grams) is added a decinormal sodium chlorid solution (about twenty-five c. c.) alkalinized with sodium carbonate. This is thoroughly agitated and allowed to stand for 36 hours. During this time the mixture is frequently shaken. It is then filtered until a clear filtrate is obtained, and washed. The filtrate is acidified with dil. acetic acid and brought to the boiling point. This coagulates the albumin. It is allowed to stand for some hours until the coagulum settles and the particles become agglutinated. It is then filtered upon a counterpoise filter. The precipitate is then washed until no reaction occurs upon the addition of sol. of silver nitrate. The contents of the filter are then dried at a temperature of 110° C. for about thirty minutes, then placed in a desiccator and afterward weighed. The albumin is repeatedly dried until a constant weight is obtained.

The tooth substance after being treated as above was again subjected to the same process, but yielded only a faint trace of albumin, showing that practically all the albumin had been removed. 7.5 gms. (115.74 grs.) yield .0028 gms. ($\frac{7}{160}$ gr.) $\frac{37}{1000}$ of 1 per cent. * * 9.5 gms. (146.60. grs.) yield .0067 gms. ($\frac{67}{640}$ gr.) $\frac{7}{100}$ of 1 per cent. * * 11.5 gms. 177.46 grs.) yield .0060 gms. ($\frac{3}{32}$ gr.) $\frac{5}{100}$ of one per cent.

(1) These analyses of the teeth will clearly show you that the amount of albumin in a tooth is of too minute a quantity to be a factor. This applies to a tooth, the pulp of which was in a normal condition when analyzed. (2) A tooth the pulp of which has undergone the process of putrefaction or albumin decomposition. The end products are no longer coagulable. (3) Had we as large an amount of albumin in a normal tooth as we have always been led to believe, the quantity of carbolic acid which would be accommodated in the pulp chamber and canals would be quite sufficient to redissolve any coagulum that would be formed.

Recapitulation. I have shown you capillary tubes containing

egg or native albumin, serum albumin (human), and artificial albumin, all of which coagulate in the presence of carbolic acid, and you will also observe again redissolve in an excess of carbolic acid. None of these has undergone decomposition. I have also shown you capillary tubes filled with decomposed serum albumin (human), and gelatin and serum albumin (human), acted upon by various pathogenic and mouth bacteria, none of which shows any sign of coagulating in the presence of carbolic acid.

After getting these uniform results by repeated experiments hundreds of times and drawing my own deductions from them, I was naturally anxious to communicate with others who might have been over similar ground in search of other subjects. So I accordingly opened up a correspondence with Prof. Vaughn, of Ann Arbor, on the decomposition of albuminous substances and will give you his reply: "There can be no doubt that the end products of albumin decomposition are no longer coagulable." Prof. Klebs, of world-wide reputation, also states that they are no longer coagulable, as also does Prof. Hektoen, of the bacteriological and pathological laboratories of Rush Medical College.—*Dental Review, July, 1898.*

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PHOSPHORUS NECROSIS OF THE JAW. The disease was first noticed in Germany, where the match-producing industry was started some years prior to its introduction into England. As far back as 1839 Lorinser perceived a special necrosis prevalent among the operatives employed in the factories in Germany and published a paper thereon. The subject opened, other contributors followed, and in 1847 Drs. von Bibra and Geist, of Erlangen, issued a work upon which the basis of our present knowledge of the subject practically rests.

The insidious nature of the disease with its lamentable consequences aroused concern, and legislative inquiries were instituted in England and other European countries with the view of devising means to prevent or counteract its ravages. Scientific investigation was conducted by medical men, who established two principal points, viz.: That in every case of phosphorus necrosis of the jaws the disease was originally associated with a carious tooth, and that operatives with sound teeth had immunity from the affection.

The improvement in latter-day factories, the proper ventilation of the "dipping" rooms and the general bettering of the condition of

the operatives have caused a considerable diminution in the number of cases; but the disease has still to be seriously reckoned with, there being, it is said, no less than six cases under treatment at one of the London hospitals, while eleven unreported instances formed the subject of the official inquiry.

Mr. Christopher Heath in his work, "Injuries and Diseases of the Jaws," provides, among other, the following interesting details of phosphorus necrosis: "*Etiology*.—The cause of the disease is unquestionably the fumes of the phosphorus which are inhaled by the operatives during the process of "dipping" the matches, and in a lesser degree during the counting and packing them. When the disease first showed itself in Germany, it was thought that it depended upon the admixture of arsenic with the phosphorus; and it is curious that in the museum in St. Bartholomew's there are some bones of cows from the neighborhood of Swansea, which, under the influence of arsenical vapor, have become enlarged and covered with a new bone formation closely resembling that around phosphorus necrosis. It has been proved, however, that arsenic has nothing to do with the disease; and if proof positive were wanting that phosphorus alone is the deleterious agent, it is supplied by a case quoted by Sir J. Paget of a man who induced necrosis of his jaws by inhaling fumes of phosphoric acid as a quack remedy for "nervousness." It is found that the phosphorus fumes produce no injurious effects, so long as the teeth and gums of the workers are sound, but as soon as the teeth become carious, or if a tooth is extracted so as to leave an open socket, the disease rapidly develops itself. The experiments upon animals by Giest and Von Bibra are amply confirmatory of this view, since they found that rabbits exposed to phosphoric fumes suffered no injury so long as the teeth and jaws were uninjured, but that if the teeth were extracted or the jaw broken, periostitis and necrosis rapidly resulted. On the other hand, a case has been recorded by Grandidier of necrosis of the upper jaw from phosphoric fumes in a child but six weeks old, and in whom, therefore, the teeth were not developed, and Langenbeck is opposed to the notion that carious teeth predispose to the disorder."

A noteworthy case might here be mentioned of one of the operatives in a London factory—a woman of good physique, who left her employment to become a wife. After eighteen months of married life she was attacked by phosphorus necrosis. The disease was

particularly violent on one side of the face, involving the loss of one-half of the maxilla and hard palate. These were replaced as well as possible by artificial means. The apparent explanation is that a low state of health following child-bearing afforded the dormant disease an opportunity to assert itself.

Mr. Heath continues: "*Symptoms.*—As the disease commences in the alveolo-dental periosteum, the early symptoms are those of alveolar periostitis. Pain referred to the teeth is one of the earliest symptoms of the disease, and this, which was intermittent at first, becomes at length continuous. The teeth become loose and pus is seen to exude from their sockets. At the same time the gums become swollen and tender and are detached to a greater or lesser degree from the alveoli, giving constant exit to a purulent discharge. In many cases of necrosis the face is swollen, so that, if only one side of the jaw is affected, a peculiar lop-sided effect is produced. In the cases of phosphorus necrosis, however, the swelling of the face is much more marked, the soft tissues around the bone being infiltrated and puffy to an extent which is not witnessed in other forms of the disease. One or more openings now form externally, through which pus constantly exudes, and the probe introduced through these readily reaches bare and dead bone.

"The patient's health has by this time become seriously affected, owing both to the actual suffering he has undergone, and to the interference with his nutrition which the state of his mouth necessarily involves, it being impossible for him to take any but fluid or semi-fluid food, and that in small quantities. The constant presence of most offensive discharges in the mouth, and mixing with the food, must have an injurious effect upon the patient, though this is questioned by Salter, who remarks that these patients swallow daily many ounces of pus "without any obvious detriment to health." The necrosed portions of bone project more or less into the mouth and give the patient great inconvenience, and in very severe cases of phosphorus necrosis gangrene of the cheeks and lips ensues with a rapidly fatal termination. In less severe cases the patient may drag on a wretched existence for months and sink at last from exhaustion, or may occasionally recover with considerable loss of bone and deformity."

To turn to the practical side of the question, it is clear from the observations of those who are acquainted with the disease and its

treatment, that precautionary measures must stand first and foremost in consideration. Man is by no means a naturally clean animal. The cleanliness of his person is a matter of education. We recognize this in many of our patients, who, after having mustered sufficient courage to submit to the filling of defective teeth, take good care in the future to keep pace with decay. In the first place it should be a regulation in all workshops where crude phosphorus is used that the teeth of the operative should be sound and healthy. Secondly, it should be incumbent upon employers to provide the necessary means for periodical examinations of the teeth and the repair of injury and enforce these examinations. Unfortunately, we have to confess that the workers themselves are not altogether blameless for their trouble. A happy indifference to the risks they run, or a callousness born of constant contact with danger, is not uncommon among them. Flagrant neglect is the consequence. Men have been known to partake of food without first removing the crust of labor from their hands. Again necrosis has been traced to the use of a pointed match as a toothpick carried among other lucifers loose in the pocket. Carelessness after extraction too is also responsible for many ills.

It becomes a duty, however, in well-governed communities to protect the foolish from themselves. A rigid scrutiny by responsible persons over the conduct of operatives in the "dipping" rooms should be exercised, and such hygienic methods as are available enforced. It is said that by abandoning the use of crude phosphorus, phosphorus necrosis would soon disappear. There appear, however, to be objections from authoritative sources to this resource. At the sitting of the Academie de Medicine in February last year, the late Dr. Magitot, in reply to questions by the minister of finance on sanitation in the match industry, said: "M. Vallin at a previous meeting proposed the suppression of the employment of white phosphor as the chief means to secure sanitary safety in this industry. I am not able to accept this view, for, in my opinion, it would amount to an avowal that hygiene is impotent to bring about the disappearance of the dangers inherent in the manufacture of matches which is now carried on. I believe, on the contrary, that by having recourse to particular precautions, one is able, even though continuing to use white phosphor, to sufficiently ameliorate the condition of this industry so as to preserve the

workpeople from phosphorism. These precautions are the putting into practice of the two following methods: A. *Forced ventilation of the workshops* (general isolated individual ventilation), by the means at the disposal of the engineer. B. *Selected workpeople*, neither permitting the entrance nor the maintenance in the factory of workers tainted with the initial lesion of the mouth, the port of entrance for necrosis. The entire prophylaxy is contained in these two terms. The observations and the experiences furnished by the match factories enable us to affirm and to prove the complete and absolute efficacy of the above measures, which I submit to the approbation of the academy."

At a later meeting Dr. Magitot supplemented his remarks by reading the opinions of the directors of one of the most important match factories. These contended that it was impossible to suppress industrially the use of white phosphor. He believed, moreover, that the adoption of the match with amorphous phosphor would constitute a worse measure than the evil complained of by developing clandestine manufacture, and thus creating anew graver centres of phosphorism.

Referring back to Mr. Simon's report to the privy council in this country (1863) we find a similarity of view expressed by Dr. Bristowe. After a careful investigation of the subject Dr. Bristowe concluded that danger existed exclusively in working with common phosphorus. Having regard, however, to the fact that with proper precautions "the use of common phosphorus for matchmaking need not be an unwholesome occupation," and while alive to the advantages of amorphous phosphor and advocating the employment of the same, he could not see the extreme necessity of any rigorous measure which would prohibit the use of the crude material.

The question as it presents itself to us is primarily a dental one. From the bulk of evidence at our command it is established beyond reasonable doubt that communication can take place only through direct contact with the periosteum of the jaw; it is therefore easy to believe that by strict attention to the teeth of those employed in such unenviable labor a baneful disease might be expunged from our text-books—except as a matter of history.

Affecting the legal aspect, it is difficult to understand the motive for concealment. What is there about these cases of phosphorus poisoning that recoils from investigation? If proper sanitary and

preventive measures are employed, and every aid that medical skill can offer utilized for the relief of the unfortunate victims, is there, we ask, any need for silence? Such proceedings only breed mistrust and court suspicion. The government edict is framed for the well-being of employer and employed alike, and any attempt to disguise the truth must be regarded as a childish evasion of the law unworthy of sensible men.—*The Dentist, July, 1898.*

* * *

BUCCAL MANIFESTATIONS OF SYPHILIS. By Faneuil D. Weisse, M.D., New York. Address before First District Dental Society of New York State, Nov. 9, 1897. My experience for years past among dental students as teacher and among dental surgeons as consultant is, that they have a dread of the buccal manifestations of syphilis that they may meet with in their practice, and a corresponding desire to know how they should deal with such cases that may come to them.

Syphilis is a systemic disease due to the introduction of a virus into the blood, which, after a period of incubation after its introduction, develops a primary and local lesion at the point of introduction of the virus. During the period of incubation, it is held, the system is under the influence of the virus, which will develop the various subsequent manifestations of a systemic disease, because even where the local primary lesion has been excised within a few hours after its development, the systemic and constitutional symptoms of syphilis have always followed.

We see an analogy to the introduction of the vaccine virus in the process of vaccination—the virus is introduced, then follows a period of incubation, then there obtains a development of the local lesion at the point of introduction of the virus, followed by a certain amount of lymphangitis radiating from the local lesion and adenitis with systemic disturbances. The effect of the vaccine virus is to immune the system against the attack of variola, or at least to partially immune it, so as to modify it into varioloid. The introduction of the virus of syphilis develops the local primary lesion; the systemic accompanying symptoms, and the several stages of the disease follow, the system thereafter being immune from subsequent infection. With reference to what the virus of syphilis is, syphilographers are still in doubt. Statements have been made from time to time that a vegetable microorganism had

been found in the blood of syphilitic patients; but each time these opinions have been abandoned.

The period of incubation after the introduction of the virus into the blood varies according to different authors; but the majority of them hold that it is about from ten days to four weeks after inoculation that the primary ulcer may manifest itself. The disease develops by three stages: Primary—the local, initial lesion or ulcer. Secondary—skin eruptions and mucous patches of the mucous membranes. Tertiary—osseous and visceral lesions (gummata or granulation-tissue formation). *The primary ulcer is the first external evidence of syphilis, no matter from what source the virus may have come.*

The source of contagion is a matter of interest to the dental profession. The virus is transmissible by application to a surface where epithelium has been excoriated or the deeper tissues wounded, and the sources of the virus are: *First*—The exudation from a primary syphilitic ulcer. *Second*—The exudation from a mucous patch (wherever situated). *Third*—The exudation from a secondary skin-eruption. *Fourth*—Inoculation of the blood from a patient in the secondary stage of the disease.

The primary syphilitic ulcer, or hard chancre, may occur at the buccal cavity from immediate or mediate contagion. I have seen the primary ulcer on the lip, the gum, and the pillars of the soft palate, but I have never seen one on the tongue. When it occurs upon the lip it presents an inflamed, spherical, hard mass, bedded in the substance of the lip, having at its surface an area of ulceration; a deep ulcer may form, if the surface is irritated by local applications. When it occurs upon the gum it is less swollen, simply presenting an area of ulceration; when upon the pillars of the soft palate, there is less prominence to the lesion and deeper ulceration.

Wherever the lesion is located at the buccal cavity, within a week or ten days one or more submaxillary lymphatic glands become enlarged, indurated and painful, but rarely suppurate. The only condition that you can confuse with the primary ulcer and enlarged submaxillary lymphatic glands is the local ulcer of epithelioma, and the consecutive submaxillary glandular involvement; but the diagnosis is easy from the history of the case,—the short history of the syphilitic lesion determining its precise character. I doubt if any dental practitioner ever sees a case of primary syphilitic ulcer at or

in the buccal cavity, because, in all the cases which I have seen, the mouth is in such a condition that it occupies the entire attention of the patient, and he or she is not likely, under the circumstances, to require any dental operations.

Passing from the primary stage, the buccal cavity may be affected in secondary syphilis by ulcerations of the pillars of the soft palate and mucous patches of the mucous membrane. When the pillars of the soft palate are affected they will be found to present an inflamed and congested appearance, with a certain amount of irritation of the throat; or there may be ulceration of the mucous membrane of the pillars of the palate, without the history from the patient of the exposure to a cold, but simply the development of the condition above described, with a certain roughness of the voice and soreness of the throat.

Concomitant with this there will have developed, in all probability, eruptions of the skin, giving further evidence that the secondary stage of the disease has been initiated. Further on, in the secondary stage, mucous patches appear upon the mucous membrane at the interior of the lips and cheeks, the dorsum and borders of the tongue,—most frequently at the borders of the tongue and the inner surfaces of the lips; seldom, if ever, at the floor of the buccal cavity.

The mucous patch is a reddish, round area; starting thus singly, several may run together, producing irregular forms of the patches. The surface is either even with the mucous membrane or a little depressed, covered with a whitish layer which you cannot scrape off; the surface does not bleed very readily, but there is a slight exudation from it. There may be but one mucous patch upon the border of the tongue, or upon the inner surface of the lip, and yet its exudation will contaminate the mucus of the buccal cavity, so that the mucus is capable of inoculating any abraded surface—skin or mucous—to which it may be applied. Sometimes you will see a fissuring of the vermilion border at the angle of the lip. Examine carefully, for there is often a mucous patch upon the mucous membrane surface at the angle. Whenever you see the above-described mucous patch conditions in a patient's mouth, tell him to go to his family physician to be treated—that his system is out of order, as indicated by the condition of the mouth.

Of tertiary buccal manifestations of syphilis we have the development of gummata or syphilomata—syphilomata is much the better

term. The structure of this tertiary evidence of syphilis is a new formation of granulation-tissue (granulation-tissue is the multiplication of the connective-tissue cells of a part) in the submucous plane or periosteum plane of the buccal parietes.

No two tissues can occupy the same place at the same time; as the granulation-tissue develops it leads, by pressure, to the degeneration and absorption of the surrounding tissue, in order to make place for the newly-formed granulation-tissue.

Most frequently the syphilomata occur in the soft palate—submucous plane—rapidly developing a swelling of the same, which presents a livid, inflamed appearance, and then passes on to ulceration and sloughing of the granulation-tissue within. It must be remembered, as stated above, that as granulation-tissue develops it induces degeneration and absorption of the surrounding tissue to make place for itself. When this granulation-tissue, as formed, sloughs, it is as a bung in a bung-hole—you take out the bung and you have a hole left. So when this granulation-tissue sloughs out, it is found to have involved a destruction or sweeping away of more or less of the substance of the soft palate—uvula, body, and even the pillars of the soft palate may be sacrificed. Under appropriate treatment the ulceration may be arrested and healthy, permanent cicatrization of the mucous membrane surfaces will occur.

When the granulation-tissue develops in the periosteum of the buccal face of the hard palate, it will cause death of the horizontal plates of the palate bones and the palate processes of the superior maxillary bones, which will rapidly necrose and be exfoliated, leaving as a direct result communication between buccal and nasal cavities. This destruction of the soft and hard palate by syphilomata or gummata determines the condition of acquired cleft palate or perforated palate, in contradistinction to congenital cleft palate.

Sometimes the periosteal gumma is located at the palate process of the superior maxillary bones, and forward, involving the alveolar process of the same, and when thus located it will involve the destruction of the alveolar process in the loss of the teeth.

There is no other disease that will produce the rapid destruction of soft and hard palate, and at times alveolar process, but the tertiary stage of syphilis, which must of necessity have had a primary and secondary history, possibly ten, fifteen or even twenty years previous. In such cases never attempt to make a prosthetic appli-

ance for the acquired deformity of the soft and hard palate. Do not attempt to take an impression of the parts until the tissues have completely cicatrized and present a perfectly healthy surface.

Hereditary or congenital syphilis has its buccal manifestations of mucous patches, and as the temporary teeth appear they rapidly decay and are shed prematurely. As the child grows up evidences of congenital syphilis in the buccal cavity are few; some cicatrices may present of previous ulcerations of the mucous membrane, and as the permanent teeth erupt they will present the condition known as the "Hutchinson peg-top teeth." The permanent central incisors come in irregularly, either converging or diverging; they are smaller than normal, the cutting edge coming down to a point. When they do not come to a point the cutting edge is notched, the notches ultimately being worn down, owing to the deficiency of enamel development.

Parrott describes a peculiar condition of the cuspids and permanent molars—the crowns presenting transverse lines of depressions, dividing the teeth into two portions, one thicker than the other. The Parrott teeth as an evidence of syphilis is not concurred in by all syphilographers, but the Hutchinson peg-top teeth with notches at the cutting-edges is generally accepted as an evidence of hereditary syphilis.

I have of course not attempted to describe all the manifestations of syphilis in its various stages, but have confined myself to the disease as it presents itself at and in the buccal cavity in the primary, secondary and tertiary stages of the disease, together with the buccal phenomena of hereditary disease. The most important syphilitic lesion for which dental practitioners should watch is the mucous patches of the buccal cavity, which present not infrequently in the mouths of men as well as women patients, as the secondary and even tertiary manifestations of the disease.

I stated before that the mucous patch has an exudation which contaminates the fluids of the mouth, rendering the buccal secretions a source of syphilitic contagion; but it is to be remembered that in a syphilitic patient without existing mucous patches in the mouth the saliva is innocuous, so that in the absence of mucous patches in a given mouth, even though the patient manifest other evidences of syphilis, you can perform dental operations with perfect safety. With existing mucous patches in a given mouth the

saliva of the same is capable of inoculating any excoriated surface of skin or membrane to which it may be applied, either directly from the mouth of the syphilitic, as by a kiss, or it may be passed from the syphilitic patient to another person by the media of spoons, cups, glasses, pencils, penholders, pipes, cigars, money (either coin or paper), napkins, etc., and lastly, instruments, surgical or dental; *but remember, that if communicated by any of these means from a mucous patch, the syphilitic lesion manifested by the patient, to whom the disease has been transmitted, is always a primary syphilitic ulcer or chancre on the person inoculated.*

Persons cannot be too careful as regards the promiscuous use of cups hanging to water-coolers in public places and conveyances.

I remember seeing a lady in one of our Fifth Avenue banks go to a desk to write out a check; her glove hampered her and she put the penholder in her mouth while she took off her glove. I could not stand it, and I said to her that it was a very dangerous thing to put a public penholder in one's mouth. She started at my remark as though she were insulted thereby, but I said to her, "I say this as a physician, that a penholder of this kind can convey a very serious disease to you," whereupon her expression changed and she said, taking the penholder out of her mouth, rather startled, "Oh, thank you! thank you!"

Toys used by children have also been a source of disease, as they are so liable to put them in their mouths. Remember that these toys have been handled in shops by innumerable persons.

Of surgical instruments, it is related that a Eustachian catheter, in the hands of a prominent aurist, was the means of communicating syphilis to thirty or forty people. The ordinary catheter has also been a means of contagion.

In respect to dental instruments, I have yet to hear or read of a well-authenticated case of mediate contagion of syphilis caused by them. I would ask any gentleman present to state in the discussion if he has ever heard or read of such a case.

As dental surgeons you may be called upon by the general surgeon to put the mouth of a syphilitic patient in a healthy condition, the patient at the time having mucous patches—namely, to extract roots of teeth, to file away any sharp, irritating projections, and to clean the teeth, as such conditions of the teeth aggravate very materially the comfort of the patient by irritating mucous patches that may be present. In such cases you must carefully examine your own fingers and see that they are free from any points of excoriation or abrasion; and all instruments used by you should be thoroughly disinfected after use. I hold that the dental surgeon should be as careful to disinfect his instruments after use in any operation—whether upon a syphilitic or non-syphilitic—as the general surgeon is. I do not think, however, that this is the practice among dental surgeons, as it should be.—*Dental Cosmos, June, 1898.*

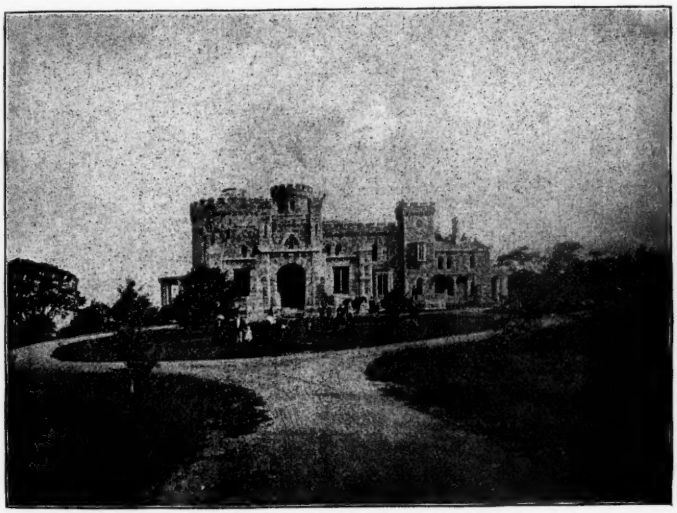
Letters.

NEW YORK LETTER.

To the Editor of the Digest, NEW YORK, August 17, 1898.

MR. EDITOR: A New York summer letter can hardly be expected to be wholly dental, so we are led to make it illustrative and incidental.

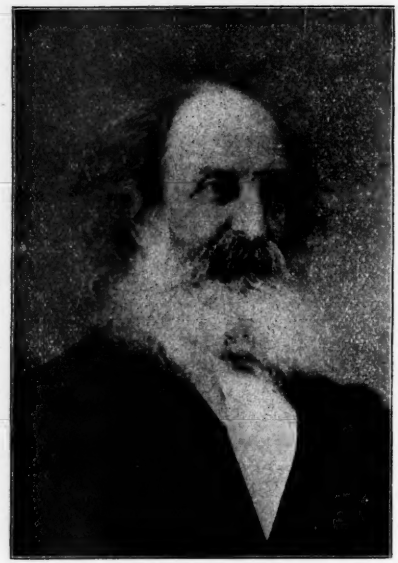
Go where we may we strike a path over which some dentist has trodden "looking down in the mouth." During an outing this month on Tarrytown Heights we visited Greystone Castle, built



by an ambitious New York merchant and costing some $250,000. On a fatal day the bubble of wealth burst and the owner took his life. The structure came into other hands and again ended a financial failure. The third time a dentist saw a fanciful ideal in the property and it became his. Originally it was copied after the famous Windsor Castle. It has a laid-out park of some thirty acres, and is situated on one of the most commanding sites on the Hudson River, and the view can hardly be equalled.

Now what dentist could have made such a venture? Only one

who has been nearly as famous in his way as the castle, and that was Dr. Maynard, formerly of Washington, D. C. No one could have met the late Doctor on the street without being forcibly struck with his appearance, and at once wondering who he could be. He had some of the characteristics of Atkinson, but was more courtly, and not of a spontaneous nature, and had more added to his circumstances to increase his self-esteem. His inventions brought him distinction and wealth, and these do not commonly tend to humility. His ability as a dentist was preeminent, and his inventions of the



Maynard Primer and Rifle brought him large revenues from the government.

While living in Washington he began to carry out his fancies for building, and we were prepared in visiting Greystone Castle to understand why Dr. Maynard could be captivated by such an establishment.

We are indebted for the photograph of his illustrious father to Mr. George Maynard, a New York artist of note and a member of the popular Century Club.

If we are rightly informed, the veteran of 87 years, Dr. John B. Rich, is the successor to Dr. Maynard. Some day it will be our pleasure to tell the readers of the DIGEST something about the man who has been in active practice so long. He looked good for another decade when last we saw him.

There was an important fact omitted from our recent letter, namely, that thiol is a very useful new remedy to be used in connection with vasogen, another new agent, being far more penetrating than vaseline. These two in combination have a decided value, not only in acute inflammation of soft tissue but even after it has subsided, being a powerful emollient.

We are tempted to criticise the editor of *Items of Interest* for his recent editorial concerning Christian Science, for we feel that he knows not whereof he speaks. We are not at all a believer in the Christian Science doctrine, but we do believe in the life of Christ made real in the natural man, and that this life covers all the needs of our spirit, soul and body. The editor of *Items* ignores this; he is a theosophist.

"What Is It" that is troubling Dr. Flagg? Nothing has ever lowered the tone of the *Cosmos* so much as that recent bit of low wit. It was too thin to deceive anyone.

A clipping from a Toronto (Canada) paper:

> Dr. R. O. Moffat, a young doctor, died in a dentist's chair to-day (July 19). He took chloroform to have six molars extracted, and died while the operation was in progress. All the teeth had not been extracted when he began to recover from the effects of the chloroform, so more was given him, and he died of weakness of the heart.

What is the necessity of having six molars extracted anyway? Some day it will be malpractice to remove six molars unless they are extraordinarily decayed. If there could be legislation in this direction, we think it would denote progress more than much of what we have had.

The dentists are going fishing. We see that Dr. M. L. Rhein and wife, and Dr. R. Ottolengui and wife are at Spring Lake, Me., and our genial friend, Gaylord, and Smyth of Washington, D. C., Fillebrown, and some others are at Rangeley Lake. If more dentists would go they would be better fitted for work. Fish are said to furnish brain food, to say nothing of the rest and recreation of procuring them. We speak with added emphasis because of a yearly

visitation to Rangeley Lake from 1862 until 1879, spending the entire month of September, and for the first few years camping out. Had it not been for these outings we could hardly have lived until this day.

Trout are frequently caught in the waters of which we speak weighing close to five pounds, and this lake was stocked four years ago with the noted Land Lock salmon, which attain a weight up to fifteen pounds.

We see by a Maine paper that many prominent New England dentists, especially from Boston, have taken refuge in the Maine woods to secure hunting and fishing.

Our present sensation is the charge against Dr. Kennedy, of this city, for the murder of a young woman in one of our hotels. He is a graduate of a reputable dental school, and his father was a well-known practitioner here for many years. The Doctor's friends will not believe that he can be guilty, and while the evidence at present is against him, it is hoped that he may be cleared from the charge.

Dr. Leroy and wife of New York recently took the steamer from New York to Portland, and then rode their wheels back through the shore towns to New York. This is a sensible proceeding and enables busy dentists to become better acquainted with their wives, which some of us fail to do.

The whole of Maine is reported to be overrun with deer, and they are so tame that they not only eat the crops but frequently pasture with the sheep and will receive food from a person's hand. The farmers are complaining that their crops and gardens are being ruined.

We met Dr. St. George Elliot on his return from the recent New Jersey meeting at Asbury Park, and speaking of the new forms of mat gold he said, that they could be packed more densely with less force because they had a greater specific gravity. We think his opinion valuable.

For some reason American dentists have not fared well during the siege of Santiago, as we see by the war news that the instruments of Dr. Juan Ferrer were carried outside his office and smashed with a sledge hammer.

We copy the following from the daily press:

Dr. Gardner Q. Colton died at Geneva, Switzerland, August 8, 1898, in the

eighty-fourth year of his age. He was the discoverer of anesthesia. Twenty years ago he estimated that in New York City alone he pulled 300,000 teeth. He was born in Georgia, Vt., February 7, 1814. He came to New York and studied medicine, and while lecturing on philosophical subjects and chemical phenomena he used nitrous oxid gas, which he called "laughing gas." One day he stumbled into the discovery of its anesthetic effects.

May it be hoped that we shall never again hear the claim that Dr. Colton was the discoverer of anesthesia, for nothing could be more false. If, as he boasted twenty years ago, he had removed over 300,000 teeth, what has he not done since, and how many of this vast number were illegitimately removed? We fear that nitrous oxid is a great blessing turned into a curse.

Dr. Phelps of Columbus, Ga., gave us a pleasant call this month. He is one of the most successful practitioners in the state and a fine operator. Cordially, NEW YORK.

PHILADELPHIA LETTER.

Dear Digest: PHILADELPHIA, August 15, 1898.

Two very interesting editorials are to be found in the August *International;* the universally honored editor, Professor James Truman, handles both subjects with his wonted skill. The first is a reply to Dr. Black, concerning his well-known views upon the subject of filling materials and the relative density of teeth. We agree with Dr. Truman that Dr. Black's deductions from his published experiments have aroused antagonism everywhere, as they are in direct opposition to the clinical experience in dentistry for many years, and men in the east at least are slow to accept these statements as final. It is not to be supposed the dental profession will be converted to Dr. Black's views so long as he confines his work to the laboratory, and holds as practically valueless all clinical observations.

The second editorial refers to the New Jersey State Board of Dental Examiners, and particularly to its secretary, Dr. G. Carleton Brown. We will not comment upon this subject, thinking it best to leave it as Dr. Truman has in the close of his remarks. However, everyone should read the editorial carefully and thoughtfully, and then read Professor Peirce's paper upon the same subject in the April issue of the *International.*

We are feeling very lonesome here in Quakerdom during the hot weather. Dr. Darby is in New York State, Dr. Kirk is reported in New England, Dr. Litch and wife are climbing the mountains,

Dr. Jack is in the country, Dr. Warren is at the seashore, Dr. Gaskill is in Europe, Drs. Truman and Peirce are in the west, bound for the Omaha Exposition and the meeting of the National Dental Association, where we hope to meet them. And so it goes, as we pass up one street and down another we find the offices of our best-known dentists closed. This is a good omen in more senses than one; it shows that many of our practitioners can afford to go away during the summer months, and that they appreciate the value of rest and recreation.

It is no doubt a fact that many men, both dental and medical, have lost their strength and health from too close application to work. A marked example of this is shown in the recent death of our fellow townsman, Dr. Wm. Pepper, a popular teacher, and one of the best-known and most successful physicians in America. Like too many other ambitious men, he overestimated his nervous force until the strain sapped his strength, and he found he was not equal to the demands made upon him; but it was too late, for he died two weeks ago in the midday of life.

To turn to a lighter matter, we referred some months ago to the fact that here in Philadelphia we never take Dr. Flagg nor anything he has to offer very seriously. He is always inclined to be humorous, and was long ago accepted as a wit. The editor of the DIGEST in the last number takes the editor of the *Cosmos* to task for publishing Dr. Flagg's "What Is It" article. Let us explain for the *Cosmos*. Dr. Kirk was no doubt in a hurry to get away on his vacation, and so left much of his work to the manager of the *Cosmos*, Mr. Frank Hise, who put in Dr. Flagg's paper as a filler. Hise is a good fellow and an able business man, but it is not to be expected that he will in all cases appreciate the scientific value of papers offered for publication. We therefore beg Dr. Crouse not to embarrass Dr. Kirk further with the matter. However, Dr. Flagg is not alone in his Christian science theories; Dr. Ottolengui comes out as a warm advocate—read the five-and-a-half page editorial in the August *Items of Interest*.

Cordially, THE SPECTATOR.

CONVULSIONS.—Professor Graham does not find children in convulsions caused by teething.

APPLICATION FOR WARTS.—Glacial acetic acid, 10; precipitated sulphur, 20; glycerin, 50. To be applied daily.

The Dental Digest.

PUBLISHED THE

TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

NEW BLOOD.

"Something will have to be done at this meeting to advance the interest in section work. We note with regret that the last three meetings have failed to introduce many new men or workers into this sort of exercise. What is wanted is some new blood and enthusiasm. This is especially true in the executive committee where old, dilatory methods are still in vogue. The meeting this year should have been boomed from the start instead of covering it with the numerous wet blankets that have nearly smothered it."—*Editorial in August Dental Review.*

We quite agree that the young men in the profession should come forward to give impetus to the society work and that the executive committee might be improved. The "dilatory methods," however, we do not quite understand, and the "smothering with wet blankets" needs some explanation.

The only damper we have any knowledge of is the report quite generally circulated that there was insufficient hotel accommodation at Omaha. No one was more responsible for this misrepresentation than the editor of the *Dental Review*. We visited him in his office, and he urged that the hotels were quite inadequate, and that a change should be made, and his influence more than that of any other person induced us to submit the question of change to the executive committee. The least he could do now would be to keep silent or else admit that he was in error. Instead of this, however, he endeavors to cover up his own part in the matter by criticising others.

We believe that all necessary arrangements for the National Dental Association meeting have been made, and we are glad to state that the railroads have given an especially low rate and that the hotels afford ample accommodations at reasonable rates. Everything points to a successful and profitable meeting, and we would urge upon the delegates not to be dismayed by the calamity howlers.

AS A PROFESSION, WHAT WILL BE OUR FUTURE RELATIONS WITH OTHER COUNTRIES?

We are in receipt of a communication from Dr. Wm. T. Harris, the United States Commissioner of Education at Washington, D. C., asking for information in regard to the standard of qualifications required of practitioners of dentistry in this country. As explained to us, he desires the facts in order to answer intelligently communications received from the secretaries of several European countries, who are making an effort on behalf of American dentists who have gone to Europe to practice their profession, and who are debarred from so doing because of the laws now in force over there.

The only ground on which such laws can justly be enforced is, that American dentists are not sufficiently qualified to treat patients properly. The laws regulating the qualifications of dental practitioners are supposed to be for the protection of the community, and the vital question is, are the dentists sufficiently qualified to serve the community, regardless of whether it is in America or in Europe? Nevertheless, the object of such laws is too often lost sight of, and legislation is secured to prohibit competition, thus greatly wronging the community. If we are correctly informed, the legislation in European countries is for the purpose of prohibiting American dentists from practicing there.

It is well known throughout Europe that American dentists are superior in skill to European practitioners, and it will not be denied that the most successful men over there are those who received their first training in America. Why then are they to be excluded and the people resident in and traveling through Europe be deprived of their superior skill?

There is no doubt that many incompetent individuals have gone from this country to practice in Europe, and have imposed upon ths community under the name of American dentists, and succeeded from the very fact that competent men have gone over there and demonstrated the superiority of American dentistry. Many of these imposters have gone there possessed of diplomas from bogus institutions calling themselves colleges, which phase of abuse justifies legal enactment. On the other hand, it is a great injustice to European peoples that the educated and skillful dentists from this country are debarred from practice.

Owing to the result of our late war with Spain, this is a much more important question now than ever before, because our intercourse with Europe will be much greater from now on, owing to the fact that we have acquired new territory, and since we are nearer our relations will be more intimate with foreign countries. It therefore seems the proper time for our educators to take the matter in hand and first adopt a course of study for all schools which will be sufficient, and second, enact national laws so that any American dentist who has proved himself competent in this country can take up the practice of his profession in Europe.

PRELIMINARY AND GRADUATION REQUIREMENTS--THE LOGICAL STANDARD.

We publish in this issue an article by Dr. M. F. Ault, which calls for more than passing notice. First, because the writer gives quite fully the arguments used at the last session of the National Association of Dental Faculties, when that body rescinded the action taken the year before which contemplated a higher standard for admission; and second, because he proposes a plan which he thinks will remedy all existing defects.

The first position taken by the writer is not logical; he says: "In this country each one is entitled to the pursuit of happiness, and the rules and regulations of an organization are not in harmony with the principles of life in the United States if they defeat the laudable aspirations of a young man or render void the law of natural selection." This principle, however, does not authorize an individual to pursue any occupation for which he is not fitted, and especially in so important a mission as the care of the human teeth. The Supreme Court of Illinois prescribes the qualifications for students of law to be equal to a high school education, and surely a profession such as dentistry is more responsible and requires much more ability than law.

In medicine as in dentistry the preliminary requirements are far too lax. Almost any young man can to-day enter a dental college if he has money enough to pay the necessary fees. His education is a secondary consideration, and his moral character is not scrutinized too closely. The exceptions to these two propositions are exceedingly rare, and where an applicant is rejected by one school he is almost invariably admitted to some other in the Association.

If the school-boy of the country school were not allowed to secure additional learning elsewhere, there might be some ground for the claim of injustice to him. The fact, however, that there are excellent preparatory schools all over this country gives no excuse for the candidate not getting a good foundation, if he has the necessary ambition and ability to make a good dentist. If he has not determination to do this, it is much better that he be kept out of the ranks of the dental profession. We already have too many of that shiftless class who give up too easily, and this is just what ails the dental profession. It is too largely composed of those who have come into it because it seemed an easy means of livelihood. They never got beyond the district school and haven't enough ambition to succeed at any occupation which requires skill and persistency. They do not care to be any better educated or uplifted, and we do not need any more such at present.

What we want for the incoming dentist is the boy who is determined to have a good education, even if he must go away from home and endure some hardships to acquire it. If that kind of a student enters a dental college he will desire something more than a mere diploma, and will work to get all the advantages that the school affords. When entering upon the practice of dentistry he will continue his studies and will have the persistency so much needed to make a success, consequently he will be a benefit to the community and an honor to his profession.

The next proposition the writer makes, that "a high school diploma will not make a better student or more efficient dentist than an honest rank won in the common English branches," is a greater error than the first one. The object of education is to discipline the mind so that the student can reason logically and think consecutively along any line of work. The district school gives merely a simple groundwork for the beginning of study, and with the limited education therein afforded the best student would not have sufficient training to understand any of the technical terms necessarily incidental to the study of dentistry. While the course in the high school gives good advantages and discipline, and in many ways teaches the pupil how to study, yet it is little enough education preliminary to the practice of a profession.

The writer further says "The plan of high school requirements will not only debar many desirable students, but if honestly enforced

will prove disastrous not alone to new schools, but even those with age and large attendance will be ruined." This statement comes from the dean of a dental college, and we are disposed to believe that this one sentence sounds the key-note which rang through the Association, and probably accounts for the retrogression of last year. What a calamity was averted from the colleges, that is, if they are run to make money. But what about the welfare of the dental profession? Well may the Faculties' Association be alarmed at the attitude of the National Examiners, who are bound to take a controlling position, unless the Faculties regain the ground lost last year.

It is estimated by reliable thinking men, some of them deans of colleges, that fully one-half of the graduates never make the practice of dentistry their life occupation, although they have spent three years' time and a large amount of money in college, before learning that they are not successfully grounded or do not possess sufficient ability to practice a profession which, instead of being easy and lucrative, requires a great amount of varied ability and is not profitable in proportion to the outlay necessary. Why are these classes so large? Because, as the writer of the article suggests, if the high standard were enforced it would not be a profitable business to run dental colleges.

The plan of examination offered by the writer will, we think, meet with general approval, and while certain modifications and changes will be necessary, the general outline is excellent, and if properly carried out will work great reforms and raise the standard of dentistry in this country far beyond anyone's expectations. The remedy must be applied, however, before the student enters college, and not when he is ready to graduate.

Notices.

FIRST DISTRICT DENTAL SOCIETY OF ILLINOIS.

The seventeenth annual meeting of the First District Dental Society will be held at Monmouth, Ill., Sept. 27-28, 1898. An excellent program has been prepared, and a cordial invitation is extended to the profession.

O. M. DAYMUDE, Ex. Com.

BI-STATE DENTAL MEETING.

The bi-state dental meeting of the Southwestern Michigan and Northern Indiana Dental Societies will be held at Elkhart, Ind., Sept. 21-22, 1898. The profession of these and neighboring states are cordially invited to be present.

F. H. ESSIG, Sec'y Southwestern Michigan Society.

LATEST DENTAL PATENTS.

607,211. Artificial tooth, George Buchanan, Philadelphia, Pa.

607,231. Artificial tooth, Charles E. Foster, Washington, D. C., assignor to National Tooth Company, York, Pa.

607,295. Dental instrument, Wm. O. Talbot, Biloxi, Miss.

608,150. Dental plugger, Alden Bush, Elyria, Ohio.

608,984. Dental plugger, Winfield E. Hanson, assignor of one-half to O. M. Shaw, Boston, Mass.

(List furnished by John A. Saul, patent attorney, Washington, D. C.)

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

Notice is hereby given that the next annual meeting of the National Association of Dental Examiners will be held in Washington, D. C., commencing 10 a. m. Thursday, Oct. 13, and continuing in session the 14th and 15th. The headquarters will be at "The Hamilton," 14th and K streets, opposite Franklin Park. The rates will be $2.00 and $2.50 per day. Members can communicate with Dr. H. B. Noble for additional information regarding accommodations.

The poll-vote closed Aug. 9, with 72 votes for Washington, 20 for Louisville, 17 for Chicago, and 12 for Omaha, balance scattering.

CHARLES A. MEEKER, D.D.S., Sec'y, 29 Fulton Street, Newark, N. J.

PROCEEDINGS OF MISSOURI STATE DENTAL ASSOCIATION.

The thirty-fourth annual meeting of the Missouri State Dental Association was held in the Planters' Hotel, St. Louis, July 5–8, 1898. About 150 dentists were in attendance and the sessions were all of unusual interest and profit. The roll was increased by forty new members during the meeting.

The meeting was opened on Tuesday morning, July 5th, promptly at ten o'clock, by the president, Dr. Frank Slater, Rich Hill.

After roll-call the regular order of business was taken up, as follows: Minutes of previous meeting read and approved.

Committee on Necrology reported that resolutions of condolence had been sent to Dr. Thompson, Topeka, Kan., to Dr. W. E. Tucker, Springfield, and to Dr M. D. Wilson, Lexington. On motion, said resolutions were adopted and made a part of the minutes of the association. A letter was read from Dr. Thompson, warmly expressing his appreciation of the sympathy of his fellow-members. On motion, the letter was received and recorded. Dr. B. L. Thorpe, Billings, called attention to the death of the father of Dr. S. C. A. Rubey, and in accordance with the custom of the association a committee was appointed to draft resolutions of sympathy.

First Day—Afternoon Session. Meeting was called to order promptly at two o'clock. Roll-call and reading of minutes was followed by miscellaneous business. The matter of publication of the papers and discussions of the meeting, discussed at considerable length in the morning session, was again taken up. On motion of Dr. A. J. Prosser, St. Louis, the association endorsed the action of the executive committee in placing this matter in the hands of THE DENTAL DIGEST, published in Chicago by Dr. J. N. Crouse.

First vice-president, Dr. F. M. Fulkerson, Sedalia, was then called to the chair, and the president delivered his annual address. [See p. 444.]

The president resumed the chair, and called on Dr. J. C. Goodrich, Wentzville, one of the oldest members of the association, for his "farewell address." He replied that the only address he could make would be one of farewell, and it was accordingly programmed.

First Day—Evening Session. Meeting called to order at 8:15. After roll-call the minutes of the previous session were read and approved.

The reading of essays and discussions was then taken up. A paper on "Orthodontia," by Dr. Edward H. Angle, St. Louis, was the next on the program, but Dr. Angle not being present it was passed.

Dr J. D. Patterson, of Kansas City, was called on and read an exceedingly interesting paper on "The Ideal Lower Denture in Difficult Cases." [See p. 441.]

Dr. J. H. Kennerly asked that Dr. J. G. Harper, St. Louis, be permitted to read his paper, which had been unfortunately overlooked on the program. Dr. Harper's paper was an able and carefully prepared essay on "Tobacco, and Its Effect on the Oral Cavity." [See p. 447.]

Miscellaneous business was again taken up, and the matter of delegates for the National Association Meeting discussed. At the request of the president, Dr. J. D. Patterson explained that delegates who were permanent members of the National Association did not require credentials, but delegates going from the various state associations must be selected by regular ballot at a regular meeting of the associations, and the selection was supposed to be based on some especially creditable work. Each delegate must carry a certificate signed by the president and secretary of his association. Each state association is entitled to one delegate for every ten members. On motion the matter was deferred until a later session of the meeting.

CLINICS AT MISSOURI DENTAL COLLEGE, SECOND DAY, MORNING SESSION.
DR. WM. CONRAD, SUPERVISOR.

Taking Impressions of Undeveloped Root-Canals. Root-Filling with Gutta-Percha and Wood Points. Dr. B. Q. Stevens, Hannibal: The wood points are made from orange-wood sticks found in dental supply houses. When a sufficiently delicate point has been secured, take a canal plugger and paint the wood point with chloro-percha about one-fourth the length it is to go into the canal. Then approximate the length of the tooth and the canal to be filled and paint a spot on the wood point as a guide when filling the tooth. Then take sheet gutta-percha about the thickness of ordinary tissue-paper, cut into small squares and wrap one or two around the wood broach by warming over a lamp. Do not think filling is at end of root when the patient flinches; draw back a little to let the air out, and then force it up to your measure. Moisten the canal before measuring with carbolic acid and glycerin. If the root is flat and tortuous in any way, pump in chloro-percha before putting in wood and gutta-percha points. Warm the points as carefully as a gutta-percha filling.

A Case of Abrasion from Tobacco Chewing. A full lower denture on left side, but lacking molars on the right; superior right lateral and central missing—have been out for years. In masticating the abrasion has worn down until the lower centrals and laterals have reached gums above. To correct this condition, construct a bridge from the right cuspid to the right central with open-faced crowns made of iridium gold. This regulates the distance the bite is to be raised. Having the distance, put thin iridium bands around the teeth to be raised without destroying the enamel except slightly between the teeth. Use 32 or 33 gauge plate and extend the bands only low enough to secure a good grip on the tooth. Drop the iridium caps in these bands and raise the bite according to the front bridge. Put two of the same kind on the right side, raise the two cuspids with platinized gold; this evens up the lower denture. In the superior mouth, fill out the lateral with open-faced crown and contour the cuspid with platinized gold filling.

The Lowry System of Crown and Bridge-work. Dr. H. S. Lowry, Kansas City, exhibited this system, which consists of a series of dies made of metal that is indestructible, and also of a stamper into which the dies fit, for contouring gold crown and for checking the cap. It is provided with a series of

complement dies, better known as trial caps, divided into sections and corresponding exactly with rows 3, 4, 5, 6 and 7 Also a crown soldering plier, used for soldering gold span crowns or "dummies" for bridge-work, for holding the band while soldering in the ring, for holding porcelain facing in coaptation with bicuspid gold crown during process of soldering. There are two series of band and contouring dies, each of which is provided with a counter or complement die. The main features of the system are durability, convenience in manipulation, and the perfect contour work it produces.

Exhibit Cranium with Two Impacted Teeth. Also Models. Dr. F. H. Achelpohl, St. Charles: 1. There was nothing especially new in the case, but it was brought forward for the benefit of those who have not the opportunity of seeing such things at all times. A case of this kind would suggest the possible cause of many cases of severe neuralgia which are difficult to diagnose. 2. Plaster-paris cast, an enlarged reproduction of the lower half of a maxilla, which has been of great value in educating students in the anatomy of the teeth and their nerve and blood supply. This is far more easily demonstrated by such means than by any amount of verbal explanation of the diseases of the teeth and their roots.

Taking Impressions and Making Models for the Correction of Irregularities. Dr. C. D. Lukens, St. Louis: Fill the forward part on the side of the tray with plaster without putting any plaster over the arch of the tray. Place the frame in position, manipulating the lips upward instead of down, so as to insure a good high impression showing all the inclines of the mouth. Then remove the tray, leaving the plaster in the mouth, and cut a deep notch in the plaster opposite the cuspid teeth. With a knife-blade pry away the front piece of plaster, breaking down the lateral half with the fingers, laying the pieces on a sheet of blotting-paper to dry and leaving them there from six to ten hours. It is very important to let them dry, because in putting the pieces together, if the plaster is wet, the sharp edges cannot be kept. Then paint them with an 18 per cent solution of shellac varnish; after half an hour coat again with a 20 per cent solution of sandarac varnish, and in about thirty minutes more with a soft camel's-hair brush paint the plaster into the impression Then turn it upside down on a glass slab to harden. After ten hours break away with a knife your impression from the model. Great care should be taken not to use a thicker solution of varnish than that given, or else you will obliterate all the fine lines of your model.

Modeling Compound as a Counter Die. Dr. John G. Harper. St. Louis: The modeling compound is heated up the same as for taking an impression, and the die is moistened with water to keep the compound from sticking to it. The die is then pressed into the modeling compound, pulled off and removed, and you have your counter die. If in swaging up the plate there are any points not driven down close enough to the die, laying a little lead and striking with a hammer will drive it into place. The advantage of using the modeling compound is that it is very quickly prepared and there is no danger of getting any lead on the plate nor of the lead and die fusing together, as is the case when you make the counter die of lead.

Refining Gold. Dr. Harry M. Hill, St. Louis, demonstrated the refining of gold dental scraps wet with nitromuriatic acid; also the inquartation process used in the United States Refining Mint. Refining gold by putting one part of the gold scraps with three parts of silver, then immersing it in a bath of sulphuric acid C. P., and applying heat to bring it to the boiling point, which dissolves the silver and baser metals, leaving the gold as a residue of brown powder in the bottom. This neutralizes the acid and makes the precipitation.

Combination Filling of Non-Cohesive and Cohesive Gold. Dr. J. G. Chisholm, St. Louis, demonstrated the use of non-cohesive gold in the three-wall cavities, finishing with a cohesive veneer mechanically united to the non-

cohesive. Claims that in all gold fillings a non-cohesive margin is superior to others, and by its use time can be saved. The strong resistance of the cohesive gold is combined with the soft yielding of the non-cohesive. The latter is used in ribbon form.

Immediate Extirpation of Pulp. Dr. P. H. Eisloeffel, St. Louis, demonstrated immediate extirpation of pulp without pain to the patient. Where pulp is exposed it is painful to remove without the application of cocain, but this method is absolutely painless. Use a piece of orange-wood and shape the point to the size of the root-canal, then with a single tap of a mallet drive the point to the end of canal, which expels the pulp, and it will come out with the wood point. If it does not, a barbed broach wrapped with a little cotton will remove it without trouble.

Dr. Eisloeffel also stated a peculiar case. The patient, a man, had a piece of steel thrown at his head, lodging there and remaining for six years. At the time of the accident a surgeon tried to remove the steel, but being unable to find it had saved the patient's life by sewing up an artery. The man suffered great pain and inconvenience when masticating and thought that a tooth was giving him trouble The teeth were examined and all found to be in good condition. He then pointed to his throat and said there was where the trouble was. His throat was so swollen that he could not swallow, and he made the remark that he thought his jaw-bone was broken. Dr. Eisloeffel, thinking it was a piece of bone, asked if he should remove it, or if he would prefer to go to a surgeon. He said, "Go ahead and remove it," which was done by making an incision and taking it out with forceps. On account of its peculiar shape, very similar to a Brazil nut, the forceps would not hold it well, but a second trial successfully brought it out, and the weight was two ounces. When the patient found that the piece of steel had been removed he jumped out of the chair for joy. He said that a surgeon had been paid a large fee for removing it. Two weeks afterwards he was seen and had improved in every way, seeming to be altogether well.

Bleaching Badly Discolored Teeth. Dr. F. F. Fletcher, St. Louis, used 25 per cent ethereal solution of pyrozone, having first cleansed the cavity of all debris and removed discolored dentin by excavators as for a filling. The pyrozone is applied on a pellet of cotton and desiccated, the hot air then applied, and in thirty minutes the result is perfect.

Second Day—Afternoon Session. The minutes of Tuesday evening's session were read and approved. The secretary then read a letter from Mr. W. B. Swan, St Louis, inviting the association to examine some rare specimens and relics collected under his supervision and on exhibition at the office of the Missouri Pacific Railway. On motion of Dr. J. R. Megraw a vote of thanks was extended to Mr. Swan for his courteous invitation and a small party organized to visit the exhibit.

The president then called on Dr. R. H. Mace, St. Louis, who presented to the association a movement for organizing a dental corps in the United States Army and Navy. Dr. Mace spoke as follows:

"The idea occurred to me a few months ago that it would be a very valuable thing to have an efficient dental corps in the United States Army and I accordingly addressed the following letter to the Surgeon General at Washington:

St. Louis, Mo., May 23, 1898.

Surgeon-General Sternberg, U. S. Army, Washington, D. C.

DEAR SIR:—Being a dentist of twenty-five years' experience and realizing how isolated will be the condition of the army in the Philippine and other islands the necessity has occurred to me of organizing and equipping a sufficient corps of competent dentists to accompany the troops. If this suggestion meets with your approval and the authority can be granted I would consider it an honor to serve my country in being allowed the privilege of

organizing such a corps. I have served three years in the U. S. Volunteer Army. Very respectfully, R. H. MACE, D.D.S.

On May 27th I received a reply to this communication, as follows:

Subject—Dentists.

In reply to No. 3838—229.

War Department, Surgeon-General's Office.

R. H. Mace, D.D.S.

SIR:—In reply to your letter of the 23d inst., suggesting the necessity of organizing and equipping a corps of competent dentists to accompany the U. S. troops, I have to inform you that there is no authority of law for the employment of dental surgeons in the United States Army.

Very respectfully, STERNBERG,
Surgeon-General U. S. Army.

Immediately upon receipt of this letter I addressed a communication to Congressman Joy:

St. Louis, Mo., June 1, 1898.

Congressman Joy, Washington, D. C.

DEAR SIR:—Enclosed you will please find copy of a letter sent to Surgeon-General Sternberg and his reply, which will give you my idea of forming a dental corps to accompany the troops to the islands.

Dr. C. H. Hughes, with whom you are no doubt acquainted, has written Surgeon-General Sternberg a personal letter commending the innovation, which letter I suppose is on file in the Surgeon-General's office.

To establish this service, which is recognized by many here to be one that will add much to the health and service of our soldiers and sailors, I realize that a bill authorizing the establishment of a dental corps must be passed by Congress. Therefore I appeal to you, hoping that you will be sufficiently interested to take the necessary steps to accomplish this purpose.

Respectfully, R. H. MACE, D.D.S.

A few days after I received notice of the introduction of a bill for the establishing of a branch of the medical department, to be known as "The Dental Corps." The following is a copy of the bill:

Congressional Record, p. 5938, May 27, 1898 Book.

Bill presented by Mr. Otey (H. R) to establish a branch of the Medical Department to be known as the Dental Corps, providing for the appointment of a Brigade Dentist for each Brigade, with the rank of Major, and one for each Regiment with the rank of Captain.

Referred to Committee on Military Affairs.

It seemed to me that it would be a proper thing to bring this matter before the association. I think it would probably give this bill greater strength to have the association indorse it, and if we do take this action the Missouri Association will of course be the first one to indorse the bill. It might be well to appoint a committee to draft resolutions to this effect if it is the pleasure of the meeting."

On motion of Dr. G. A. Bowman, St. Louis, a committee was appointed to draft resolutions indorsing the action of Dr. Mace.

The essays and discussions were then taken up, and Dr. J. R. Megraw, Fayette, presented his paper on "The Individual and the Society." [See p. 459.]

At the suggestion of Dr. J. H. Kennerly the courtesies of the floor were extended to Dr. J. N. Crouse, Chicago, who addressed the meeting concerning the past, present and future work of the Dental Protective Association.

On motion of Dr. G. A. Bowman, St. Louis, the association took action indorsing the work of Dr. Crouse, and appointed a canvassing committee.

The next paper on the program was by Dr. R. L. Ready, Liberty, on the "Treatment of Pyorrhea Alveolaris." Dr. Ready not being present, the paper was read by the secretary, Dr. H. H. Sullivan. [See p. 453.]

Second Day—Evening Session. After the transaction of considerable

miscellaneous business, Dr. F. F. Fletcher, St. Louis, read his second paper on "The Ideal Bridge of To-Day and the Next Step to Improve It." [See p. 455.]

The next paper taken up was on "The Young Man in Dentistry," by Dr. O. W. Bedell, St. Louis. [See p. 527.]

CLINICS AT MARION-SIMS DENTAL COLLEGE, THIRD DAY, MORNING SESSION. DR. WM. CONRAD, ST. LOUIS, SUPERVISOR.

Approximal Filling, Tin and Gold. Dr. M. C. Marshall, St. Louis, demonstrated the use of tin and gold in combination for filling deep-seated cervical cavities. The carrying qualities of tin combined with gold are so peculiar that they cannot be explained in words, but after educating the sense of touch anyone can readily see what is meant by the carrying quality. Again, tin acts upon the tooth structure in a therapeutic manner, and is also a poorer conductor of thermal changes than any other metal used in filling teeth. The tin we now get from the manufacturer is chemically pure, eliminating the disintegration heretofore claimed to take place. We secure the carrying properties of tin combined with gold by placing one sheet of No. 4 tin between two sheets of No. 4 gold, cutting it into strips and rolling. I think by the above operation a better apposition is secured to the vulnerable parts of these deep seated cavities. The only objection is the bronze-like appearance of the filling that follows.

Dr. Burton L. Thorpe, Billings, demonstrated the treatment of putrid pulps with a preparation of two parts sodium and one of potassium, as manufactured by Dr. Schreier, Germany. It is a white, silve y-looking material, something like mercury in appearance. The bottle is sealed up with wax and has to be punctured with a broach. Use an old barbed pulp canal cleaner in this treatment, throwing away after using, as it becomes brittle and is liable to be broken off in the tooth. After applying the rubber-dam and gaining free access to the cavity, dry it with cotton, and then insert a minute particle of this preparation on the broach, being careful not to use too much, as the material has a strong affinity for oxygen and forms combustion with the putrid material of the pulp. Care should be used in not overtreating with this preparation. After treatment put in a dressing of oil of eucalyptus, seal and leave for a day or two before inserting the permanent filling. This material burns the putrid matter and leaves it in a soapy condition.

Dr. J. H. Kennerly, St. Louis, demonstrated a quick method of making temporary crowns by using an ordinary rubber tooth, to which is soldered a wire, the crown being contoured and retained by means of gutta percha.

Dr. P. H. Morrison, St. Louis, demonstrated the thorough cleansing of teeth. The salivary calculus is frequently not all removed and sanguinary calculus is often entirely overlooked. Proper instruction should be given to the patient about the use of tooth-brush and care of the mouth.

Third Day—Afternoon Session. Minutes of previous session were read and approved. The first paper was by Dr. A. H. Thompson, Topeka, Kan., on "Antiseptics in Dentistry." [See p. 529.]

Dr. O. L. Kerr, Independence, Mo., then read his paper on the "Preparation of Compound Cavities in Molars and Bicuspids." The paper was illustrated by a series of pencil drawings from which the accompanying cuts are made. [See p. 521]

The next essay on the program was by Dr B. J. Cigrand, Chicago, on "The Full Porcelain Crown Without a Peer." Dr. Cigrand was not present but had forwarded his paper, and same was read by Dr. J. H. Kennerly. The subject was illustrated by diagrams, which were distributed among the members before the reading.

Third Day—Evening Session, was devoted entirely to the transaction of

business. Minutes of previous session were read and approved. The president then called for the report of supervisor of clinics, Dr. Wm. Conrad. Same was submitted, and on motion accepted. Election of officers followed.

Fourth Day—Morning Session. The meeting was called to order, and on motion the courtesies of the floor were extended to Dr. H. W. Loeb, St. Louis, for the purpose of describing and exhibiting a case of unusual interest at present under his care. Upon being introduced, Dr. Loeb said: "I am very much pleased to be here, and to give you an opportunity of seeing what I consider an unusually interesting case for dentists as well as rhinologists. The patient is a young woman, perhaps twenty years old, and she says that her trouble all comes from a kick of a horse which landed on the bridge of her nose. Investigation has suggested to me, however, that the affection is due to lupus. The nasal bones and soft parts are entirely destroyed, and the openings of both antrums can be seen and their accessories. For this reason I thought the case would be of special interest to dentists, as these openings are not visible in the natural state and cannot often be seen in the living subject. The demonstration will prove to you, I think, that these openings are much higher up than is generally supposed." Recess was then declared for the purpose of viewing the subject. The presentation was one of great value and was highly appreciated by the dentists. On motion of Dr. B. L. Thorpe, the thanks of the association were tendered to Dr. Loeb.

Essays and discussions were then resumed. Dr. H. Prinz, St. Louis, presented a very valuable paper treating of "Hemorrhage Following the Extraction of Teeth, Its Etiology and Treatment."

The subject of "Antidotes" was treated by Dr. DeCourcy Lindsley, St. Louis. The topic was of universal and practical interest and called forth a very general discussion. [See p. 533.]

Dr. E. S. Chisholm, St. Louis, was on the program for a paper on "Philosophical Laws as Applied to Dentistry." He was not present, but a letter from him giving a brief outline of the subject was read by the secretary, and on motion was placed on record.

Miscellaneous business was then resumed. The report of the treasurer, Dr. James A. Price, was read and accepted. The report of the executive committee, Dr. J. H. Kennerly, chairman, showed most efficient service and a minimum expenditure, which called forth a vote of thanks from the association in accepting same. On motion a vote of thanks was extended to the following whose courteous assistance had rendered the meeting a success: To the Planters Hotel Co., to the St. Louis Dental Manufacturing Co, to the Missouri Dental Depot, to the Rowan Dental Manufacturing Co., to Dr. Wm. Conrad, supervisor of clinics.

The installation of officers was next in order, and the retiring president, Dr. Frank Slater, appointed Drs. Kennerly and Prosser sergeants at-arms to present the president-elect, Dr. F. M. Fulkerson, for installation. Dr. Fulkerson being presented, Dr. Slater in a few words welcomed him to the office and presented him to the association as their presiding officer for the ensuing year. Dr. Fulkerson responded fittingly and took the chair.

A cordial invitation had been extended to the members of the association to visit the Anheuser-Busch brewery during the afternoon. This is the largest plant of the kind in the world and is one of the sights of St. Louis. Quite a large delegation availed themselves of this opportunity.

Adjourned to meet the first Tuesday after the Fourth of July, 1899, in Kansas City.

MIXTURE IN DIFFICULT DENTITION.—Sodium bromid, 50 centigrams; orange flower water, syrup of ether, of each 30 grams; distilled water, 120 grams. For external use. Rub the child's gums with the mixture several times a day, after nursing.—*Pediatrics, v., 46.*

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LISTERINE is used in various degrees of dilution. One to two ounces of LISTERINE to a pint of water will be found sufficiently powerful for the general care of the deciduous teeth of children, whilst a solution composed of one part LISTERINE and three parts water will be found of agreeable and thoroughly efficient strength for employment upon the brush and as a daily wash for free use in the oral cavity, in the care and preservation of the permanent teeth.

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we have succeeded in overcoming this difficulty, and we will guarantee it to require less repair and to outwear any angular attachment now on the market.

It can be attached to our "No. 1" Handpiece, or to a No. 6 or No. 7 Handpiece.

As will be seen from the cut, the bur can be held at either an acute, right or obtuse angle.

A No. 2 right angle bur can be used, so that no extra expense is necessary for special burs.

Finally, **the price is right**. Why pay more when you can get the best and most scientifically made Angle Attachment on the market for

$7.00.

Dental Protective Supply Co.,

1101 CHAMPLAIN BUILDING,

CHICAGO.

Another Announcement

concerning Dr. Colburn's pamphlet on the care of the teeth.

To those dentists who read our "Card" in the last issue of the "Digest" naming July 1st as the date set for the distribution of the revised edition of Dr. Colburn's pamphlet, we desire to say this work will necessarily be delayed about three weeks by our lithographers in order to complete it to our satisfaction. No further delay is anticipated. The edition should be ready August 1st and in the hands of all inquiring dentists during that month.

Hall & Ruckel,

215 Washington St.,
New York,
July 1, 1898.

Sole Proprietors of Sozodont,
New York and London.

ATTENTION

Is called to the report
made to

The New Jersey State Dental Society

by a special committee consisting of

Dr. S. C. G. WATKINS, Montclair;
Dr. B. F. LUCKEY, Paterson;
Dr. P. J. WILSON, Princeton;
Dr. C. W. HOBLITZELL, Jersey City;
and Dr. J. A. WASS, Hammonton,

appointed by the Society, to investigate and report upon **Prophylaxis, Dentifrices, etc.**, as to the remarkable

ALKALINE, ANTISEPTIC, ASTRINGENT and DETERGENT

properties of

TOOTH PASTE
Dentacura
TRADE MARK

THE IDEAL DENTIFRICE

and its great therapeutic and prophylactic value in the treatment of

Caries, Stomatitis, Pyorrhea,

sore, bleeding and spongy gums, etc.

DENTACURA
A
DETERGENT
DISINFECTANT
DEODORANT
DENTIFRICE

Send for report, free sample, literature, etc.

Dentacura Co.

NEWARK, N. J.

DENTAL CARIES

ITS ARREST AND PREVENTION.

The researches of Dr. Leon Williams have shown that almost all softening of enamel and structural decay of the teeth are due to the action of acids excreted by bacteria *in situ*. The manner in which the destruction of the tooth substance is effected is well shown in Dr. Williams' last paper reprinted in the July "Cosmos."

The destruction of these acid-producing bacteria is the first step in the process of arresting further decay of the tooth, and of all germicides, Pyrozone 25% Solution (Ethereal) is the most effective against the development and activity of the microorganisms causing caries. Almost all softened and decayed enamel may be freed from these acid-producing bacteria, and rendered aseptic by simple applications of Pyrozone 25% Solution after mechanical interference and the usual soothing applications.

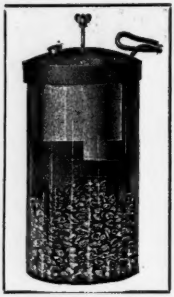
Dr. Williams says: "My own opinion, based on an experience extending over five years, is that we can place in the hands of our patients the means for preventing at least two-thirds of the dental decay now prevalent."

The simplest method for preventing caries is the use two or three times a week of Pyrozone 3% Solution (Aqueous) as a mouth-wash in conjunction with the tooth-brush.

Pyrozone 3% Solution penetrates between the teeth, thus destroying the hot-bed for bacterial life which the tooth-brush cannot reach. It prevents the formation of the horn-like film over the proximal surfaces of the teeth, which furnishes a lodging for the acid-producing organisms of decay.

Complete literature on Pyrozone sent on application to McKesson & Robbins, New York, or to The S. S. White Dental Mfg. Co., New York, Philadelphia, etc., Sole Agents for the Dental Trade.

What They Say about the EXCELLO Improved Gravity Battery



SPRINGFIELD, MASS., Aug. 1, '98.

Burnham Electric Co.

Gentlemen—The porous cups came all right, and I wish to say that I have had six of your batteries in constant use for eight years and I am very much pleased with the way they work. I have made electricity a sort of hobby—for amusement partly—for ten years, and I think the Excello battery is constructed upon just the right principle for cleanliness and ease of keeping in order. Hoping you much success, I remain,

[Signed.] Yours, DR. GEO. S. BURT,
487 Main St., Springfield, Mass.

We have dozens of just such letters as the above from customers all over the country. We ask only that our outfits be given a fair trial and we will abide the results. Write for our descriptive circulars concerning **charging storage cells,** for operating **dental engine and polishing lathe, mouth illumination, dental mallet, fan motor, etc.**

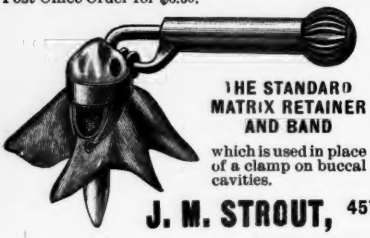
BURNHAM ELECTRIC CO.,

Address Department A. 146 Franklin St., BOSTON, MASS.

The Improved
Universal Matrix Carrier

Price, $3.50—with one band. Bands, 50c per doz.

Is the only retainer and carrier combined. You will see by the cut that it is so constructed that it can be attached to any sized tooth without change of matrix. It is made to carry the thin steel ribbon band matrix. By turning cap at end of barrel, you can cause matrix to close around and hug until it conforms to shape of tooth. You do not need to have a different matrix for different teeth; one does for all. Sent to any part of the United States on receipt of Post Office Order for $3.50.



THE STANDARD MATRIX RETAINER AND BAND

which is used in place of a clamp on buccal cavities.

The accompanying cuts represent
The Standard Matrix Retainer

Patented Aug. 27, 1895.

Fig. 1

Fig. 3

Fig. 2

The Standard Matrix Retainer. Price, $3.00.

Fig. 1 shows retainer. The hook or traveling arm is operated by bur at end of barrel. This retainer can be used upon the buccal, labial, lingual and palatine surfaces of the teeth.

Fig. 2 shows band around first molar, drawn to place and held by retainer.

Fig. 3 shows retainer in a different position, also shows jointed matrix.

J. M. STROUT, 457½ CONGRESS STREET, PORTLAND, ME.

Above Retainers for sale by

Dental Protective Supply Co., Chicago.

MODERN DESIGN.
BEST WORKMANSHIP.

Patented October 12, '95.

Weight of Driving Wheel, 13 lbs.
Diameter of Driving Wheel, 12 in.

"No. 1" Dental Engine

With Fourteen Instruments and Oiler.

PRICE, $38.00

Boxing 75 cents extra.

STUDENTS requiring the best value for their money will recognize the efforts we are making to supply their wants by furnishing a highly finished Dental Engine of modern design at moderate cost.

This Cable Arm Engine, supplied with our **No. 1** Handpiece, is constructed upon **correct** mechanical principles, and is the easiest running Dental Engine made.

The Drop Pulley Head is supplied with **long** bearings, insuring steady running. The Hub, as will be seen in the cut (C), is chambered so as to **center** weight of wheel. It will be seen also that the Engine is supplied with a rocking standard or upright.

A slight upward toss of the cable raises the arm into position. Pressure on the thumbpiece at (A) lowers it.

We supply a flexible Sleeve and Nickel Plated Water Cup with every Engine.

The Dental Protective Supply Company,

1101-3 Champlain Building, Chicago.

OUR RECORD-BREAKER

ONE SET PER MINUTE

WHY DO YOU WAIT?

905 6 7-8 New York Life Building,
St. Paul, Minn., April 14, 1898.

American Endoscopic Co., Providence, R. I.

Gentlemen—I could not remain at Mankato. Some patients who were going abroad demanded my attention, but in **fifteen minutes** I had **fifteen orders,** and could I have remained there another day would have been able to send you fifteen or twenty more. I have not the time to tell you how delighted the dentists were with the outfits. Enclosed find check.

Please acknowledge receipt to the dentists when you ship their outfits.

With best wishes,

Yours truly,
E. K. Wedelstaedt, D. D. S.

1,000 Sets at $5.00

SEND FOR CIRCULAR

Our Dental Illuminator

Portable; Weighs 10 Lbs.

WE ARE THE ONLY HOUSE IN THE WORLD THAT SELLS INSTRUMENTS AND ATTACHMENTS FOR ILLUMINATING EVERY CAVITY OF THE BODY THAT MAKE THEIR OWN LAMPS AND BATTERIES.

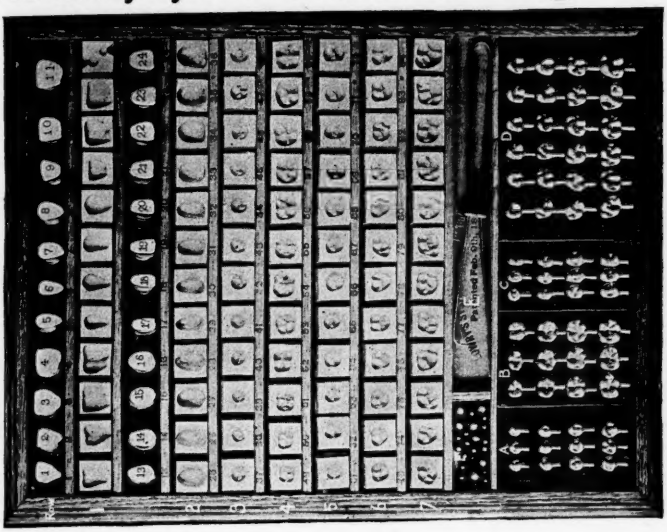
American Endoscopic Co.

Makers of
Electrically Lighted Surgical Instruments and Attachments,
High Grade Miniature and Decorative Lamps.

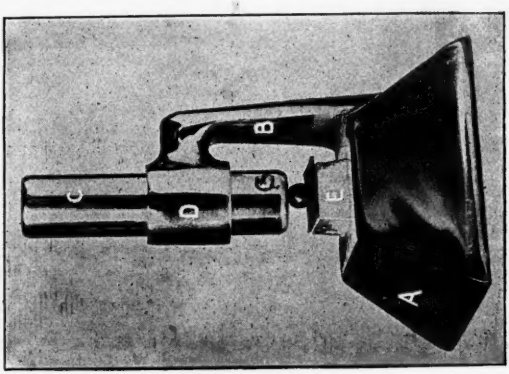
Weybosset, Union and Middle Sts.,

PROVIDENCE, RHODE ISLAND.

The Lowry System of Crown and Bridge Work



Lowry's System of Crown and Bridge Work produces the most shapely Gold Crowns and Bridges, with a better Articulation, in less time, and with less work and annoyance than any other system known to the profession.



Used and Recommended by the Most Prominent Practitioners

PRICE $20.00 Write for Descriptive Booklet

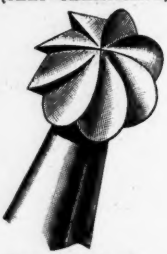
H. S. LOWRY, D.D.S.

613 New York Life Building, KANSAS CITY, MO.

"DUAL BLADE" BURS

Will cut faster and cleaner than any others.

(SELF-CLEANSING)



Patented Feb. 5,'95.

Patented Feb. 5,'95.

The twin blades traverse the entire cutting surface of the bur.

These burs **clear themselves** when in use, enabling the operator to work rapidly, and they **shave, not grind,** the dentin.

These are the burs which made other houses **cut the price.**

WHEN ORDERING PLEASE STATE THE STYLE REQUIRED.

For Universal Handpieces.

For No. 2 Right Angle Attachment.

For Nos. 1 and 3 Right Angle Attachments.

For Davis Angular Handpiece.

KEPT IN STOCK IN THE FOLLOWING SHAPES AND SIZES:

Round. Wheel. Cone. Inverted Cone. Pear. Bud. Pointed Fissure. Square Fissure. Oval.

Painless Dentistry is possible with "Dual Blade" Burs.

PRICE

Per Dozen, $1.50
Per ½ Gross, 7.50

Dental Protective Supply Co.

1101-3 Champlain Bldg., Chicago.